

# COMPUTERWORLD

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## CDLA to urge tax changes

### Financial benefits in offing for users, lessors?

By Jake Kirchner  
CW Washington Bureau

WASHINGTON, D.C. — The Computer Dealers and Lessors Association is readying a well-financed lobbying blitz to seek tax law amendments that could mean millions of dollars of benefits for computer users.

The object of the campaign is to get the U.S. Congress to place computer equipment in a three-year, accelerated cost-recovery system depreciation category. This would allow those who sell, lease or use computers to obtain the full extent of investment tax credits and depreciation benefits during the useful life of the machine, which, CDLA argued, is

closer to three years than five years, as suggested in existing law.

The 1981 Economic Recovery Tax Act placed computer equipment in the five-year depreciation category with a 10% investment tax credit. CDLA Executive Director James F. Benton said government revenue losses caused by a shorter depreciation schedule would be offset by reducing the tax credit to 6%, as the association proposed. This would put it in an existing category that includes light-duty cars and trucks, certain research equipment and other short-lived machinery.

The benefits of the proposed change would  
See **CDLA** page 8

## Unix, C language seen hot tickets to success in DP job market

By John Gallant  
CW Staff

WALTHAM, Mass. — If you are a software design engineer with three to five years of experience with Unix operating systems or the C language, you may be able to write your own ticket to success.

That was the consensus among software manufacturers represented at the Softfair '84 job fair held here last week. Among the 29 local companies seeking applicants at Softfair, at least 22 were looking for software design or development engineers. Thirteen compa-

nies advertised for software personnel with a Unix or C background, and many others interviewed by *Computerworld* said that such experience would be useful for a candidate.

Touted by its promoters as the nation's first job fair solely for software professionals, the two-day event gave programmers, analysts, designers and software support specialists an opportunity to slip out of work early and meet with recruiters from a variety of high-tech firms. The number of job openings offered by the companies at Softfair  
See **JOBS** page 6

### TOP OF THE NEWS

Extortion, bribery and a sting all highlighted a busy week in high-tech crime, capped by a string of arrests. **Page 2.**

Fraudulent misrepresentation could cost Honeywell, Inc. up to \$1 million, as a judge rules in favor of a Level 6 minicomputer user. **Page 5.**

Did "slavery" to her VDT cause the multiple birth defects of an operator's child? That's what one woman told a U.S. House of Representatives subcommittee last week. **Page 9.**

A reconsideration of the FCC's access charge plan may be in the works, according to the chief of the commission's Common Carrier Bureau. **Page 11.**

Disclosure of a mayoral candidate's medical records may have hurt the candidate and has prompted privacy concerns about access to the increasing number of such records kept on-line. **Page 18.**

Sherpa guides and yaks will tote a high-tech load as an American team begins its assault on Mt. Everest. **Page 26.**

A computer was a key tool in a recent discovery about cancerous tumors. **Page 29.**

### FYI

## Teenage burglars play swap 'em with stolen micros

By James Connolly  
CW Staff

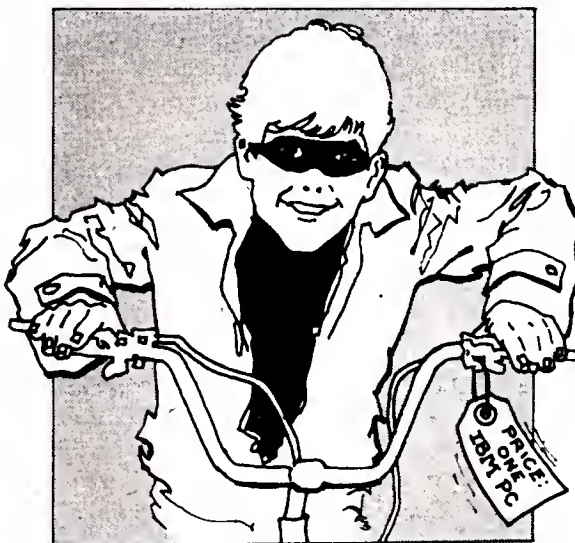
ATLANTA — Burglarizing businesses and swapping \$10,000 computers like baseball cards, a gang of "basically good kids" amassed a \$250,000 collection of stolen microcomputers, according to police.

The gang, with a half-dozen teenage participants involved at various levels, allegedly broke into 30 businesses within five months, selectively taking computers, modems, expansion cards and software, apparently for their own use.

DeKalb County Police Investigator Randy Fitch, a personal computer user himself, pursued the thieves for five months and broke the case in February on a tip that IBM operator manuals had been stored in an apartment complex.

According to Fitch, the 15- and 16-year-old thieves were of average intelligence — "not geniuses" — and were interested in computers and electronics. He said they initially stole out of curiosity and accumulated equipment that they traded "the way kids traded baseball cards 30 years ago."

"It was a case of 'wants' problems — people who wanted something and couldn't afford it, so they just took it. One



kid in particular found a way to break into businesses, a certain flaw in the way big office complexes were built. He and a couple of others started going in to look around. But all of that stuff was there, and they just started taking it. They said they had become interested when they took computer science courses in school," Fitch said.

The youths took not only computers, but also medical equipment such as stetho-

scopes and optical lenses. They almost always stole software, sometimes leaving businesses with no corporate records. One confessed to Fitch that they knew their stolen goods were worthless without software. In one case, they allegedly stole eight Apple Computer, Inc. Lisa systems, valued, with software and peripherals, at \$126,000.

The youthful burglars were selective. "They gained entry to at least one computer equipment store, and rather than take the equipment that was for sale, they took the operating equipment and software. Sometimes they didn't even take the whole computer. They would take an IBM [Personal Computer] XT apart because they wanted the modem card out of the expansion board," Fitch reported.

One allegedly stripped the hard disk drive out of one Personal Computer XT and added it to a second XT. "That gave him 20M bytes. I asked him how long he figured it would have taken him to fill it, and he said he had just scratched the surface and that it would take him 30 years," added Fitch, who said he and his wife use an IBM Personal Computer in their home.

See **THIEVES** page 6



## NEWS

# Sting foils \$1 million chip plot

By Robert Batt  
CW West Coast Bureau

LOS ANGELES — In what is believed to be the biggest-ever sting operation of its kind in Southern California, two businessmen were arrested here last week and charged with illegally attempting to buy \$1 million worth of semiconductor parts.

The two men, Benzion Blumenfeld and Nahum Sahar, were arrested after a three-month undercover operation conducted by Silicon Valley chip manufacturer Signetics Corp. and local detectives. They are due to appear in court here Wednesday, charged with receiving stolen property.

Sahar, who owns a company called Aero Distributors in Beverly Hills, is accused of attempting to pay \$300,000 for chips he believed to be stolen.

Blumenfeld, although not directly participating in last week's transaction, is alleged to have been involved in four previous illegal transactions valued at \$40,000.

According to Bruce Radetich, chief corporate investigator for Signetics, the company first became aware of Blumenfeld, owner of a Woodland Hills, Calif.-based firm called Ben-tronics, when he tried to solicit random-access memory and read-only memory chips worth hundreds of thousands of dollars from the firm's subsidiary in Bangkok, Thailand.

## Suspicion confirmed

"Our plant manager in Bangkok was very suspicious of this inquiry, so, posing as another company, we brought in an undercover officer and arranged to meet Blumenfeld in Los Angeles. It was there that he introduced us to Sahar, who turned out to be the big money man, and we did a couple of deals with them in which we sold them purportedly stolen products," Radetich claimed. None of the chips were in fact stolen, he added.

Signetics said the sting operation was revealed when Sahar paid a \$150,000 deposit for \$1 million worth of 74 LS series chips, a popular chip design made by Signetics and other chip manufacturers. The chips are in short supply at the moment and were expected to bring an inflated price on what has become known as the "gray market" — the twilight zone between legal and illegal trafficking in chips.

Under the terms of the alleged deal, Sahar was to pay the remaining \$150,000 shortly after receiving the parts. He was instead arrested by a Los Angeles detective as soon as he took possession of the parts.

"While we have been involved in similar sting operations in the past, this is the first time we have taken part in an operation in which this much money was involved," commented Jerry Good, a detective at the West Valley division of the Los Angeles Police Department.

The successful sting is the fourth such operation involving Signetics in the last 18 months.

# Social Security DP official charged with extortion

By Patricia Keefe  
CW Staff

BALTIMORE — A ranking government DP official was arrested here late last month and charged with attempted extortion of more than \$400,000 for fixing a subcontract.

Kenneth M. Barry, director of the Social Security Administration's (SSA) Software Technology Center in Woodlawn, Md., was arrested by Federal Bureau of Investigation agents. The attempts to bribe a Los Angeles software firm allegedly took place from April 1981 to April 1982, when Barry was director of the SSA's Office of Data Communications.

The subcontract Barry allegedly tried to fix was related to a larger contract held by Paradyne Corp., against which the Securities and Exchange Commission (SEC) has a pending fraud suit.

Federal prosecutors in Los Angeles are expected to seek an indictment against Barry, who was released on a \$50,000 personal recognizance bond. If convicted, he faces a maximum sentence of 20 years and a \$10,000 fine. An SSA spokesman said Barry is on "administrative leave with pay" pending the outcome of the case, but declined to comment further. Attempts to reach Barry's attorney were unsuccessful.

An affidavit by FBI agent Jonathan Hersley attributed remarks to Barry that implied he may have helped to influence the award of the

\$100 million hardware contract to Paradyne in 1982. That contract award has spawned numerous protests from competitors, two pending court suits, a congressional inquiry and an investigation by the Department of Health and Human Services [CW, April 4, April 11 and April 25, 1983].

Michael Wolansky, an SEC attorney, said the SEC had previously taken depositions from Barry and may recall him for further testimony in light of Hersley's statement. Hersley claimed that Barry met in Florida with a principal of Engineering & Contract Labor International (E&CLI) — the Los Angeles software vendor — and John Applegate, a former Paradyne vice-president overseeing the SSA contract.

Hersley also alleged that Barry encouraged a joint venture between Alfred Leung, a consultant to Paradyne and a former SSA employee, and E&CLI for the purpose of handling the software subcontract, which he promised to secure from Paradyne after arranging for Paradyne to obtain the \$4 million base contract.

The affidavit also alleged that Barry told E&CLI officials that he planned to leave the SSA and wanted them to provide funds to "stake him" in a new company.

Barry also provided E&CLI principals with in-house SSA documents that they weren't entitled to, according to Hersley.

# Two accused of soliciting bribes from software development firm

By John Gallant  
CW Staff

BALTIMORE — Federal officials are seeking indictments against a Defense Department employee and a New York City oil company executive who were arrested last week and charged with soliciting nearly \$645,000 in bribes from a Boston software developer.

Edward D. Thomas, an employee in the Defense Department's Tri-Military Information Systems (Trimis) office, and A. Walton Hill, an executive with an unnamed oil company, were arrested Feb. 25 in Bethesda, Md., by Federal Bureau of Investigation agents posing as representatives of Intersystems Corp. of Boston.

According to FBI spokesman Andrew Manning, Thomas and Hill are accused of soliciting payments from Intersystems in exchange for inside information about a \$44.5 million military contract. Manning said Thomas approached Intersystems in November and offered to supply information that would help the firm in bidding to supply software to be used in a computerized health care system for the Defense Department.

Manning said that Intersystems' attorneys immediately contacted the U.S. attorney's office in Boston, which subsequently turned the investigation over to the FBI here. It was not until Feb. 16, however, that an FBI agent posing as an Intersys-

tems employee first met with Thomas at a Bethesda restaurant. At that time Thomas allegedly promised to supply all information necessary for Intersystems to win the contract and told the agent to work out payment details with Hill in New York.

During three-way telephone conference calls with the undercover agent on Feb. 21 and 22, Hill and Thomas proposed a series of four cash payments totaling \$200,000, plus an additional payment of 1% of all or whatever portion of the contract Intersystems was awarded. A meeting on Feb. 25 was also arranged, at which the first \$50,000 payment was to be made.

On that date, according to Manning, Hill arrived in Bethesda and was transported by Thomas to a Holiday Inn where the meeting took place. After Hill accepted the cash payment from the undercover agent, other FBI investigators rushed into the hotel room and arrested him. A short time later, Thomas was arrested at a gas station a few blocks from the Holiday Inn.

Manning said Thomas was charged with violating a federal antibribery statute, and Hill was charged with aiding and abetting a bribe.

Both men were held until last Monday when they appeared before a federal magistrate in Hyattsville, Md. The two were released on \$25,000 bond.

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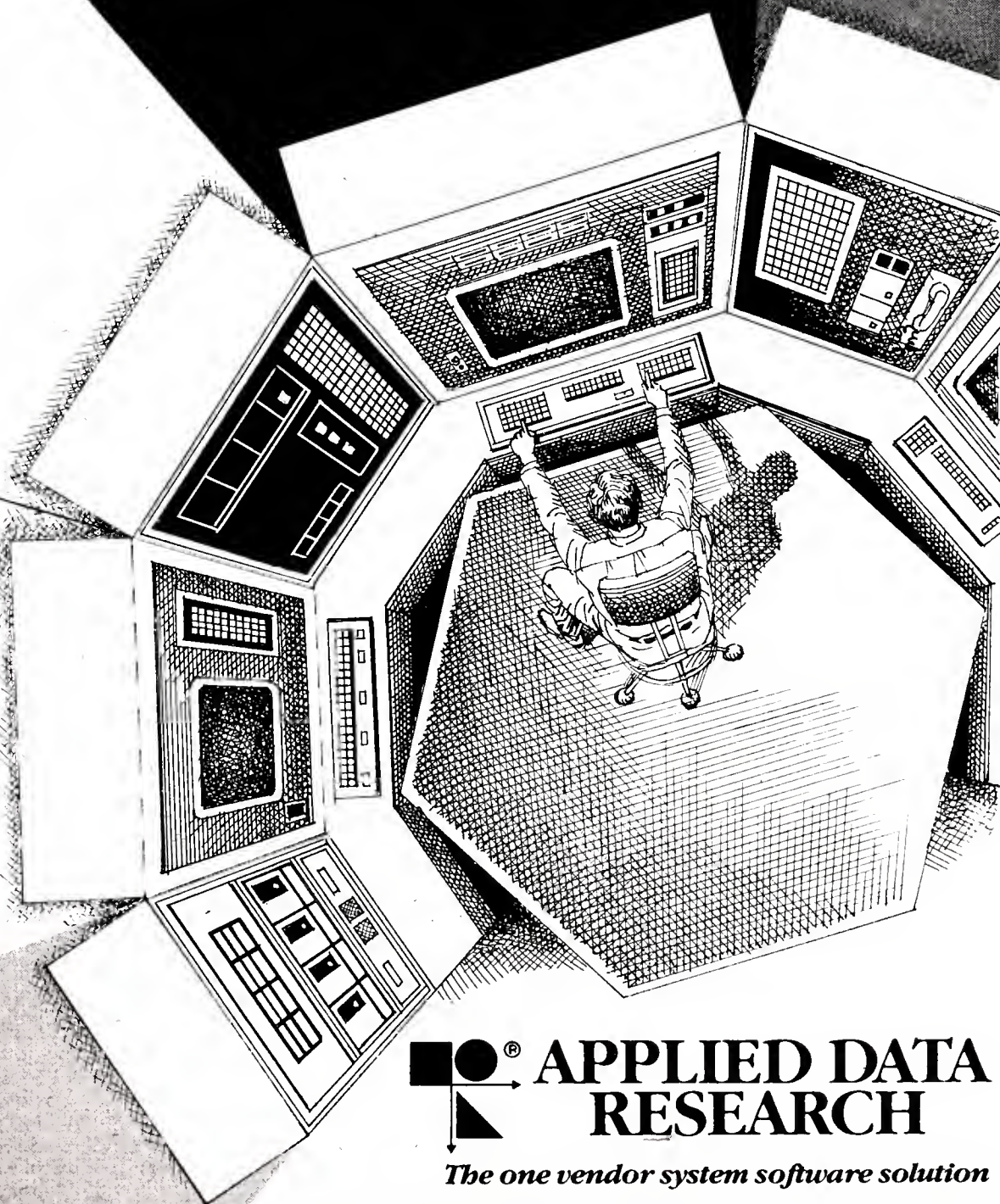
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## NEWS

# IBM X models disappoint 3080 series users

By Tom Henkel  
CW Staff

Users of IBM 3083 and 3081 processors were disappointed but not surprised by IBM's recent announcement of 3080 X model processors, DP managers polled by *Computerworld* last week revealed.

IBM announced last month that six new X models of the 3080 series will replace current models in the line [CW, Feb. 26]. For the same price as existing models, the processors offer 5% to 14% greater internal throughput. Users of existing models, however, cannot field-upgrade to the newer processors.

While industry analysts were calling the IBM announcement a slick marketing move aimed at squashing a potentially fertile market for used 3080 series processors, users contacted seemed to accept the possibility that their processors will now have a lower-than-expected resale value. All agreed their chief complaint about the announcement was the lack of field-upgradability from the older 3080 systems to the X models.

Contending processor life cycles are growing much shorter, almost to the point where mainframes have become disposable business items, Harold Colby, senior vice-president of DP

at Boston's John Hancock Mutual Life Insurance Co., said he never expected his one 3083 and five 3081 processors would have much resale value by the time the insurance company decides to replace them. Colby said the 3080 series X models fit into a general trend in the processor marketplace, where systems rarely outlive their first owners' processing requirements. Rapid-fire technological advances often make processors obsolete in under three or four years, he added.

## Could have been worse

The lack of field-upgradability from the older 3080 series processors was a disappointment for Colby. However, being forced into making a processor swap does not present as big a problem as migrating to another operating system would, he added. Things could have been worse, he said, if IBM had changed the ground rules on its systems software.

The manager of technology at another large user site, the Information and Computer Services Division of Shell Oil Co. in Houston, echoed Colby's feelings. Emphasizing that Shell does not particularly enjoy it when IBM announces new products that make their current hardware ob-

solete, Merle Bone said such a turn of events is a possibility users must take into consideration — especially if they are using the biggest and newest processors IBM is offering.

"We would have preferred it to be a retrofit," Bone said. But he equated the X model announcement with IBM's cutting hardware prices six months after a firm purchases a system. In the case of the price reduction, no one would expect IBM to refund the user's money. Likewise, if IBM offers a faster version of its current processor lineup at the same price as a previous version, users cannot realistically expect IBM to refund current users' money.

But a smaller user, John H. Porter, director of the Academic Computing Center at Boston University, was not as understanding as Colby and Bone. He felt IBM deceived him.

When Porter was considering a 3081 processor, he flatly asked IBM if the processor would be field-upgradable to newer models. At the time, he said, IBM answered in the affirmative. Now IBM appears to have changed its mind, he said.

"How many times can IBM do this in the period of a decade without losing all credibility?" Porter asked. He noted that users of IBM 370/155 and

165 processors were placed in a similar situation several years ago.

According to Porter, the amount of impact the IBM X models' introduction will have on his operation will depend on how easy it will be to migrate from the older 3080 processors to IBM's next line of processors, sometimes called the Sierra line.

Some industry watchers speculate that the newer 3080 X models may be field-upgradable to the yet-to-be-unveiled Sierra processor line. If that turns out to be the case, Porter said, he will be very upset.

"I couldn't care less about the X models," Porter said, explaining that since his DP requirements are growing at an annual rate of about 25%, the moderate performance increases offered by the X models would not help much.

In contrast, users like Brian Scott, president of Banks of Iowa Computer Services, Inc., felt they had won in the IBM processor game. Scott noted that his firm was one of the first to receive a 3081 processor two years ago. That means the firm has already had a fair amount of use from the processor. Other users who were leasing 3080 series processors said they were glad they chose to lease rather than purchase the machines.

## Third-party lessors downplay X series' impact on residual values

While there is general agreement that IBM's new X model 3080 series processors will hurt residual values of installed 3080s, third-party lessors dealing in IBM hardware last week said they did not feel the impact would be significant.

Gerald L. Minsky, president of Technology Finance Group, Inc. of Westport, Conn., noted that third-party leasing firms with 3080 systems already out on lease will probably not be hard hit by the X model announcement. Lessors that will have problems, Minsky said, are those who have 3080 series processors that have yet to be leased to an end user.

Minsky explained that most

third-party leasing firms anticipated a very low residual value on 3080 series processors.

Therefore, he claimed, the X model announcement may not have a devastating impact on leasing firms.

The big question, Minsky said, is what sort of migration path IBM will provide to its anticipated next series of large processors, sometimes called the Sierra line.

If IBM offers current users of 3080 series processors a bridge to the Sierra line, the residual values of currently installed systems may not be seriously affected, he continued.

In fact, if there is a bridge to the

Sierra, Minsky said the older 3080s will suddenly become good buys. But if the X model processors are field upgradable to the Sierra line, which is what some industry watchers expect, older 3080 series processors will be very hard to lease or sell, according to Minsky.

But Richard Forsythe, president and chief executive officer of the Chicago-based Forsythe/McArthur Associates, Inc., believes even if the newer X models are field-upgradable to the Sierra line, there will still be a market for the older 3080s.

As an example, Forsythe noted that the IBM 3033 series processor is still selling, even though the IBM 3033 line has been outdated for

about two years.

Forsythe explained that not every user is eager to migrate to the latest processor available from IBM. Further, he said not every IBM user is making a hurry-up effort to migrate to IBM's MVS/XA operating system.

"I'm glad I don't have any," Svend Hartman, president of Computer Merchants, Inc. of Chappaqua, N.Y., said of the older 3080 machines.

Hartman, who deals in smaller systems, explained it will be difficult to sell or lease an older 3080 series processor until IBM resolves the questions surrounding the migration path to the Sierra line.

## Group announces test results of micro interfaces with B6800s

LONG BEACH, Calif. — Michael Stahura and Associates, Inc. has made available the results of the Microcomputer Common Interest Group (Micro CIG) Initial Microcomputer Test completed here recently.

The test addressed the interface of several microcomputer systems with a Burroughs Corp. B6800 mainframe at B.J. Hughes Corp. in Houston.

The performance of each microcomputer — an Apple Computer, Inc. Apple IIe; Burroughs ET 2130; ECS Microsystems, Inc. ECS 4500; IBM Personal Computer; Televideo, Inc. TS802H; Victor Technologies, Inc. Victor 9000; and Xerox Corp. 820-II — was examined in the areas of hardware interfaces with the main-

frame, terminal emulation mode capabilities, switching from micro mode to system mode, terminal control functions and file transfer capabilities.

Micro CIG, part of the Cooperating Users of Burroughs Equipment, which is listed as the official users group for Burroughs Corp. computing equipment, is responsible for collecting, coordinating and disseminating information on microcomputer interfaces with Burroughs mainframes.

The Initial Microcomputer Test results are available for \$5 postage and handling from Michael Stahura and Associates, located at 500 Havana Ave., Long Beach, Calif. 90814.

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## NEWS

# Victim of Honeywell fraud to claim damages

NEW YORK — Already judged a victim of fraud at the hands of Honeywell, Inc., a computer user will return to federal court soon to claim damages of up to \$1 million.

In addition to providing William M. Selden, former owner of a New York service bureau, with yet-to-be-determined compensation, the verdict may help other users to win suits against vendors whose sales pitches misrepresent their products, according to the victor's attorney.

Selden recently won a civil suit in which he charged that Honeywell officials defrauded him and his company, Accusystems, Inc., in 1978 when they told him the Honeywell Level 6 minicomputer with TL-6 utility software would allow him to run up to 32 terminals and multiple tasks.

But, according to Selden, the software never performed as Honeywell claimed, failing to support more than three users even when he bought more memory on Honeywell's advice, and that failure drove him out of business. He sold his payroll and accounting services business and his family farm to pay his debts and moved to Los Angeles, where he now works as a consultant.

Selden had sought \$9 million in actual and punitive damages in his 1980 suit [CW, Oct. 27, 1980]. Last month, U.S. District Court Senior Judge Dudley B. Bonsal found that Honeywell had defrauded Selden, but he dismissed most of Selden's damage claims. Bonsal is expected to hold a new hearing in late spring to determine Selden's losses.

Bonsal ruled in favor of Honeywell on Selden's claim that Honeywell was negligent in servicing the system. But of the fraud allegation, the judge said, "The representations made by Honeywell to plaintiffs prior to the agreement [purchase contract] were known by Honeywell to be false or made recklessly without knowing whether they were true or false, in order to induce plaintiffs to enter into the agreement. . . . The representations that the TL-6 operating system had been extensively tested and could concurrently perform multiple tasks for multiple users were representations of fact and not merely promises of future action or statements of intent."

The judge declined to award damages at the time of his verdict, noting that Accusystems failed to mitigate its damages when it became apparent in May of 1979 that the TL-6 system would not work right. He said Accusystems can collect for damages suffered only between February 1978, when Selden bought the system, and May 1979. He also refused to assess Honeywell for Selden's lost profits or for punitive damages.

Selden, who claimed to be one of about 40 dissatisfied TL-6 users, said, "I would be looking for something in the neighborhood of \$1 million." He said that two other TL-6 users settled suits against Honeywell for undisclosed sums and that others settled out of court. However, Selden's attorney, Thomas K. Christo, noted, "I think we are probably in the \$500,000 to \$800,000 range."

Honeywell's attorney, James D. Liss, offered a still lower estimate of damages. "We believe the award in the case will be under \$250,000," ac-

cording to Liss.

Liss also foresaw no long-term impact from the case, saying that the judge's ruling "ignores the contract" and relates only to misrepresentations made before the signing of the standard contract. That contract limited Honeywell's liability to repair or exchange defective equipment.

## 'Psychological' impacts

But Christo predicted three, at least "psychological," impacts from the ruling. "It means that if somebody lies about what a given product can do, they can be held liable for fraud, no matter what the contract

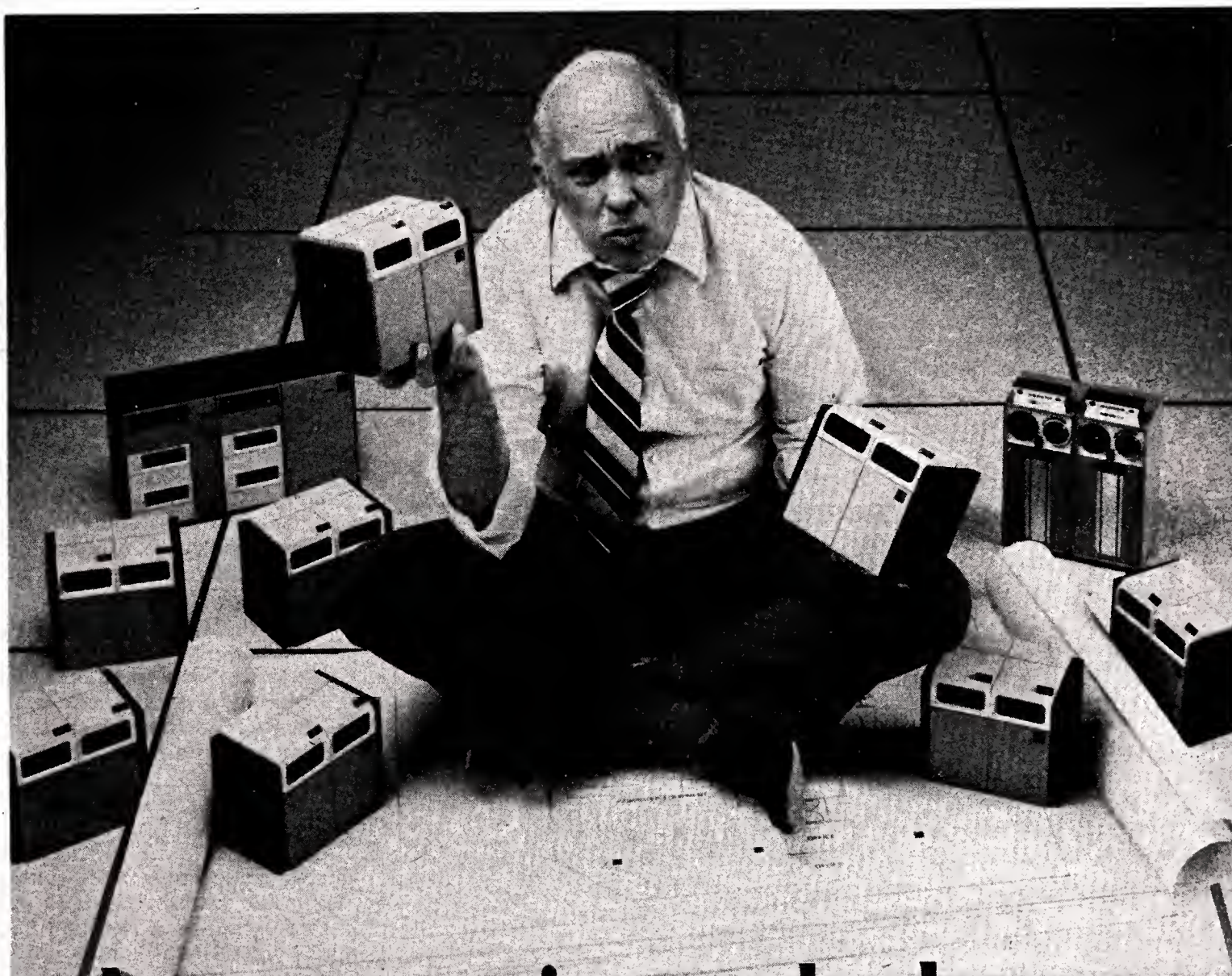
says," he said. He also cited the import of Honeywell's unsuccessful bid to show that Selden, a former systems analyst for IBM and a member of the team that developed Cobol, was knowledgeable about computers and shouldn't have relied on the sales force's statements. He said the verdict could keep other vendors from relying on the theory of caveat emptor (let the buyer beware).

The third point cited by Christo was that Selden's win came in a jury-waived trial, where the losing vendor couldn't complain about a user's emotional appeal swaying unsophisticated jurors.

Attorneys for both sides said decisions would be made later on whether to appeal the portions of the case which they lost.

Selden ordered six Level-6 computers when he started his business in 1977, but received only one. He paid Honeywell about \$40,000 for his system.

The Level 6 and the MOD-200 operating system with the TL-6 option, installed in about 100 locations, are still available, but only on an "as available basis," according to a Honeywell spokesman. The spokesman declined comment on the case because it remains active in the courts.



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## NEWS

# Job fair seen one of many recruiting tools

WALTHAM, Mass. — The job fair is only another weapon in the battle to attract high-quality software specialists, according to recruiters at Softfair '84.

"I think it's a good idea," said Ron Koloski, employment specialist for Canton, Mass.-based Codex Corp. "The job fair draws together a pool of qualified people. But you can't rely on it totally; it's only one tool among many."

Other representatives of the high-tech companies attending Softfair had mixed feelings about the effectiveness of job fairs in recruiting software professionals. "I have found that a lot of the people attending are entry-level candidates. Expe-

rience is rare, and people who have it are tough to find. But I think this is an excellent idea. It brings together a lot of good prospects in one central location," said Richard Bielefeld, technical support manager for McCormack & Dodge Corp. in Natick, Mass.

"We get a lot of resumes, and most aren't of any interest to us," said R. Kent Blackett, software development manager for Masscomp of Westford, Mass.

"There is a lot of paper on the market that doesn't fit our needs. But overall, our experience with this sort of thing is positive. If we can find even one or two good people, it beats paying finders' fees to an employ-

ment agency."

The outlook was not much different on the other side of the booths. "This is great for people with lots of experience," according to one entry-level applicant looking for an opening in technical software support. "But all the resumes go into one big pile, and that won't help me any when the recruiters review them later."

"I don't have an electrical engineering or a computer science degree, so I'm not sure I'm in demand here," another hopeful with programming experience said. "But this is a good way to approach a company. If you can make a personal contact, it beats just sending a letter."

## JOBS from page 1

ranged from as many as 300 to as few as three.

Recruiters said they were looking for candidates with an average of three to five years in the industry, although openings in such areas as documentation and entry-level programming were also available to applicants with less experience. Applicants with backgrounds in most programming languages and major operating systems were in demand, but the emphasis was clearly on Unix and C specialists.

"We're especially interested in finding candidates who have at least

three years of experience in C. It's important to us because we're a multisystem software manufacturer. Our products run on a variety of processors, and C is a very portable language," said Edward McHugh, director of software engineering for Interlan, Inc. Based in Westford, Mass., Interlan designs and manufactures local-area network systems.

Gregory Denaro, senior employment representative for Bunker Ramo Information Systems in Trumbull, Conn., was also in the market for Unix experience. "Unix is going to be hot in the next few years, and it's hard to find qualified candidates. A lot of them are overpriced, which

means that you're going to have to spend lots of money to get them. Software development engineers are big, too; you can judge that just by the number of positions available."

According to Ron Koloski, employment specialist for Canton, Mass.-based Codex Corp., opportunities are wide open for C programmers and Unix specialists. "The market is extremely good, and people seem more secure in seeking out these opportunities. They're not sitting around trying to hang on to what they have. The economy is booming, and people are moving."

While traditional programmer and programmer/analyst jobs were not in abundance at Softfair, there were many openings for graphics and communications software professionals. "It's never easy to find data communications people," Koloski said.

"The market for communications specialists is pretty tight right now," McHugh said. "We've had some success finding qualified applicants here, but we're looking for skills that are pretty hard to find."

# C language, Unix get nod over Cobol

WALTHAM, Mass. — Applicants at last week's Softfair '84 job fair here agreed with employers on site that skills in the Unix operating system and the C language are highly marketable assets.

"If you look around, you'll see there are still some openings for people with Cobol background. But I've heard nothing but praise for Unix and C. That seems to be the big thing around here," said a software quality assurance analyst who, like others, asked not to be named.

A programmer/analyst armed with a stack of resumes agreed. "I'm quite surprised at how few of the recruiters are looking for Cobol experience. It's obvious to me that C is on the rise. Telecommunications specialists are also in demand, from what I've seen here."

According to one graphics applications programmer, the applicants most in demand are those with experience in Unix, C and graphics software design. "The market is great for graphics people like me. I don't know how long that will last, but for the moment, I feel like I'm a valuable commodity."

When asked what advice he would offer to those about to choose a career in software, a former design engineer said, "I'd tell them to get into systems programming on high-end microcomputers. That's where you're going to see the real money. Experience in graphics and telecommunications will open a lot of doors, too."

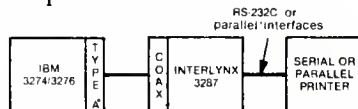
"My advice," said to a programmer seeking a career change, "would be to get as broad a background as possible in system design and to learn at least a couple of languages."

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## THIEVES from page 1

The gang allegedly traded computers for other "wants," such as bicycles: One swapped a Personal Computer XT for a 10-speed bike.

They wrote their own game programs, sometimes erasing corporations' data to reuse diskettes, and tried hacking, with only minimal success.

They used telephoto camera lenses to peer through office windows and read telephone numbers posted near modems. However, they accessed only electronic bulletin boards with their computers, according to their

statements.

The equipment, allegedly taken in breaks throughout DeKalb and Cobb counties here, was recovered in apartment building storage areas and has continued to stream into Fitch's office as the suspects turn in stolen goods in hopes of leniency. As goods are recovered, the value of everything taken in the breaks could soar past \$350,000, in addition to the less tangible losses businesses suffered when their software disappeared, Fitch said.

The youths, who remain unidentified under juvenile laws, are awaiting trial.

## Export act extended for 30 days

WASHINGTON, D.C. — The U.S. Congress last week extended the Export Administration Act for 30 days as the U.S. Senate neared completion of its bill to restructure government export controls.

The interim measure came last Wednesday with the existing law set to expire that midnight. It became necessary because although the House approved new export controls late last year, the Senate did not take up its bill until late February. When

the Senate passes its bill, the two houses must seek a compromise between the two versions before a final measure can be sent to the president.

The Export Administration Act originally expired in the fall, but has been temporarily extended several times.

Passage of a new export control law has been delayed because of a continuing controversy over the extent to which exports must be restricted to protect national security.

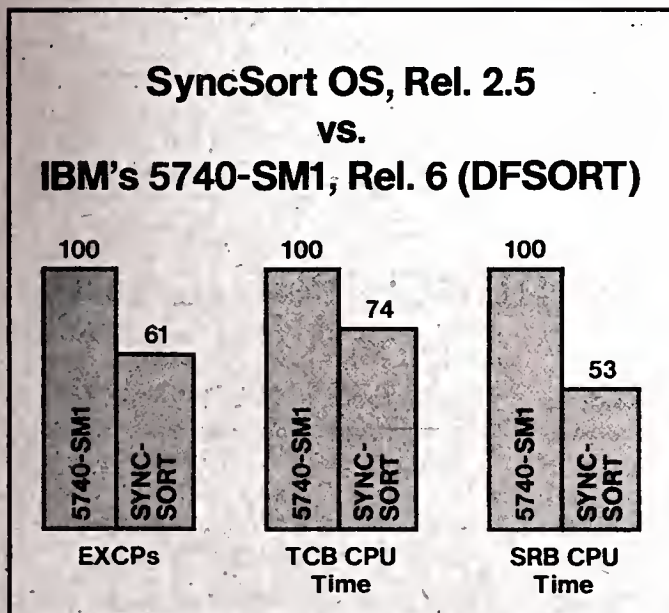


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**Ironically, some of SyncSort's most glowing recommendations come from the mouths of IBM systems engineers. Here's the latest example.**

One of our systems engineers recently visited the computer center of a well-known worldwide manufacturer. His mission was to install and demonstrate SyncSort 2.5, the latest and most advanced release of our OS sort program.

As our man sat down at the console, an IBM "MVS Specialist" joined the group. "Can I help with the installation?" he asked. Of course, Our Man replied, thanks for the offer.

After SyncSort 2.5 had been installed, the IBMer came up with another helpful suggestion. "Would you mind if we benchmarked your sort against our 5740-SM1, Release 6? I just happen to have a copy here."

Not in the least, Our Man replied. It was the first duel between SyncSort 2.5 and Release 6 (also known as DFSORT). But our systems engineer was confident that 2.5 could outperform Release 6 anywhere, anytime.

**The benchmark was run, and the results bore out Our Man's confidence. SyncSort 2.5 had outperformed Release 6 by a wide margin.**

The IBMer was clearly disappointed. But he wasn't ready to concede yet. "Let's take a look at the results on the monitor I've installed," he said.

He explained that the monitor had an "awesome capability" for measuring total resource consumption. It produced an overall "resource utilization" index that reflected the aggregate impact of such vital items as SRB CPU Time, TCB CPU Time, and EXCPs.

Suppressing a grin, Our Man agreed. And this time the IBMer shot himself in the foot with his own monitor.

**SyncSort 2.5 had outperformed Release 6 by a whopping 36% – as the charts below indicate:**

## Resource Utilization Index

IBM	100
SYNCSORT	64

**How did the IBMer react? Like a gentleman and a scientist. "Well," he said affably, "I've always known a lot of specialized software houses can produce better products than we can in certain areas. Obviously, you've got the best sort!"**

Then he deleted his sort program from the system and went on to other duties.

Who said chivalry is dead?



## CDLA from page 1

be tremendous for CDLA members, Benton explained. They could get more favorable credit terms when writing equipment leases, would write more leases because user turnover of computers would be more rapid and would get access to used computers — already a \$2.5 billion-to \$3 billion-a-year market — while the machinery is newer and, thus, more attractive. Vendors would see more sales as well, he added.

For end users, the benefits would be just as dramatic, said Charles Greco, director of financial services at International Data Corp., a Framingham, Mass., market research and consulting firm. Users who lease computers would see "more aggressive rates," reflecting the better credit terms dealers could obtain. Those purchasing computers would make out even better, Greco said.

As an example, Greco said that a buyer of a \$1 million computer who wants to upgrade to a better machine after three years would, under current law and financial practices, lose two years of depreciation and have to pay back to the government at least one-third of the 10% investment tax credit. It is hard to persuade the corporate finance office to approve a new purchase if it would mean a loss of \$433,000 in tax benefits, he noted.

Three-year depreciation would allow an MIS manager to move out obsolete equipment "without some treasurer breathing down his neck," Greco said, because the user would receive the full tax benefits before updating equipment. It would "give the user tremendous flexibility... to move to newer technology if it is available," he said.

The CDLA has prepared a white paper with the arguments for the shorter depreciation schedule and

drafted a letter to congressmen and senators, seeking support for legislation to implement the change. The lobbying campaign will be discussed at the association's meeting in Acapulco, Mexico, later this week.

The thrust of the letter is that the five-year schedule is too long, unfair and a "bias against new advances in computer technology [that] — if left uncorrected — will hurt the American industry, help Japanese and other foreign competitors and retard future growth throughout the entire computer industry."

Congress will love the proposal, Benton predicted, because of government concern about the health and international competitiveness of U.S. high-technology industries. In any case, CDLA has levied a special assessment on its members to pay for the lobbying effort. "I'm really looking at a big pot... We've got a lot of money in the bank," according to

Benton, who has also enlisted the aid of the high-powered Washington, D.C., law firm Patton Boggs and Blow in the campaign.

The association also plans to meet with other industry groups in an effort to form a joint coalition on this topic, Benton said. Officials at the Computer and Business Equipment Manufacturers Association and the Computer and Communications Industry Association told *Computerworld* they are interested in getting the tax law changed, but indicated they have more pressing concerns at the moment, such as export control law amendments and research and development tax credits.

Benton acknowledged that in an election year, there is not much likelihood of tax law amendment, especially one that might be perceived as reducing government revenues. Thus, the campaign may not be successful until 1985, Benton concluded.

# British banks give check-clearing system rave reviews

By Susan Blakeney  
CW Staff

LONDON — A decade ago, British banks began looking for a faster way to clear checks. Ten years and approximately \$30 million later, they have implemented the Clearing House Automated Payments System

(Chaps) and realized their goal.

The banks officially inaugurated Chaps on Feb. 9, and according to project leader Edward Stubbs, the chief inspector of London's Bankers' Clearing House, "It's working extremely well, and we've had no problems."

Chaps was developed by the British software house Logica Ltd. The distributed system is expected to extend same-day check clearance (which is presently available only in London's financial district) to individual and corporate clients throughout the country and facilitate same-day clearance of checks well beyond the current 3 p.m. deadline.

"Right now we've limited the system to deal only with payment between £10,000 and £100,000 sterling," which is equivalent to about \$15,000 to \$150,000, explained Stubbs. "We intend to increase the upper limit within the week to £1 million and eventually remove all limits."

Prior to Chaps, British bankers relied solely upon London's network of 6,000 messengers, who scrambled about the congested city on a daily basis, supporting the bank's paper-based check-clearing system. Now running parallel to the messenger service, the on-line Chaps system enables payments and credits to be transferred at the speed of electricity "immediately and irrevocably throughout the day," Stubbs noted.

Even banks with different computer systems can use Chaps, according to Stubbs, because each bank has a separate electronic gateway into

the British telephone information switching service. They communicate with each other through an interface from Tandem Computers, Inc. "The Tandem interface between the bank's main computers communicates over telephone lines — it's a message-switching system, actually," Stubbs said.

The coded information on each check is electronically recorded and sent from one computer gateway to the gateway of the receiving bank. Payment is guaranteed by the sending bank the moment the information passes through the gateway.

Chaps is expected to result in sizable bank savings from reduced paper and messenger use. Stubbs said 80% of London's banks are already using Chaps, and the full benefits of the system will soon be realized when the remaining banks come on board and all upper and lower limits are removed from the system.

In the few weeks that Chaps has been on-line, it has sparked quite a bit of interest from the financial community, Stubbs remarked. "We've had inquiries from banks all over the world," he said proudly.

"I suppose I'm a bit biased, but I can't tell you anything detrimental about the system. I'm very encouraged," Stubbs concluded.

## IBM analysis seminar set for May

MILWAUKEE — Fred Lamond, an observer of trends in data processing and of IBM in particular, will present an in-depth analysis of alternative growth strategies for IBM users during seminars in May in San Francisco and Washington, D.C.

Among the issues to be covered in the "Lamond on IBM" seminars are alternative network architectures, compatibility and data base requirements; the future of IBM large systems; and the future of the centralized production center. Lamond will also attempt to answer such questions as "Will the IBM Personal Computer replace the 3270 terminal?" and "Can the 3083 win against Japanese competition?" according to Pa-

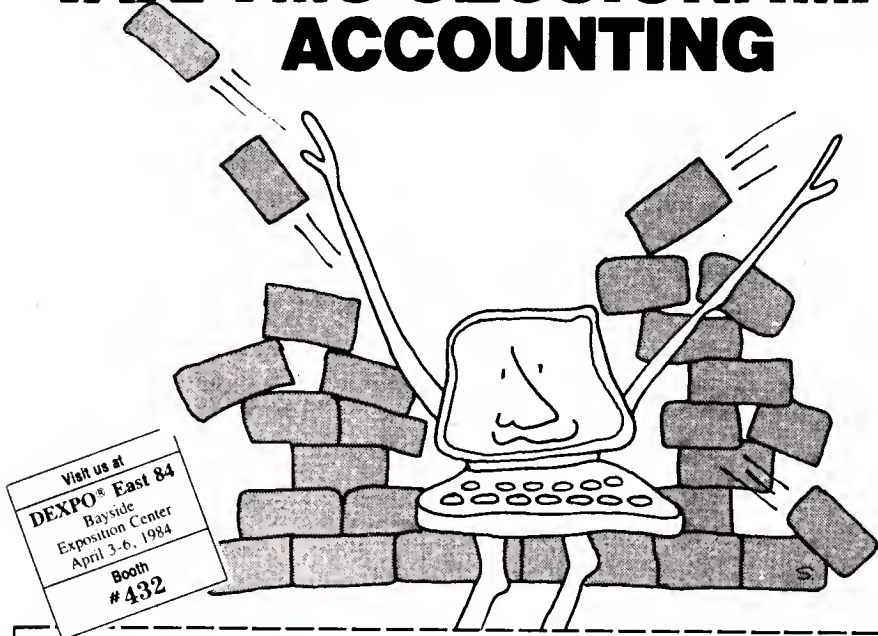
kala Bennett, a spokeswoman for Cap Gemini DASD, the seminars' sponsor.

A speaker at conferences around the world since 1975, Lamond worked for five years in market research in Great Britain and has worked for other firms in the computer industry.

The San Francisco seminar will be held May 2-4 at the Westin Miyako, and the Washington, D.C., seminar will be held May 7-9 at the Sheraton International Conference Center.

Both seminars have limited enrollments and are the only U.S. appearances for Lamond this year. Seminar registration is \$895 per person from Cap Gemini at 9045 N. Deerwood Drive, Milwaukee, Wis. 53223.

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## NEWS

# Mother links child's birth defects to VDT use

By Jake Kirchner  
CW Washington Bureau

WASHINGTON, D.C. — A Syracuse, N.Y., insurance company clerical worker told a congressional subcommittee last week she suspects her "slavery" to work place automation caused the multiple birth defects of her recently born child.

Rebecca Alford told the House Education and Labor Subcommittee on Health and Safety that her employer, the Equitable Life Assurance Society, introduced VDTs to its clerical operations with no regard for its employees. This, she said, "enslaved us to the new machinery and subjected us to health and safety hazards."

Her testimony came last Tuesday as the subcommittee opened its investigation into VDT safety. Subcommittee Chairman Rep. Joseph M. Gaydos (D-Pa.) said later hearings will allow representatives of VDT manufacturers, users and the scientific community to present their sides in the growing controversy over possible VDT health dangers.

Survey information released last month by 9 to 5, the National Association of Working Women, contained anecdotal information suggesting widespread health hazards related to prolonged VDT use [CW, Feb. 20, Feb. 27]. Eyestrain, backaches, stress and other ailments resulting from ergonomic factors of terminal design and use are generally conceded even by representatives of equipment manufacturers, who argue most of these problems could be alleviated by better work place design and working conditions.

## Manufacturers fight bills

Manufacturers are strenuously fighting legislated regulation of VDT operation, saying the cure would be worse than the problem. They note that long-standing suspicions that VDT radiation causes birth defects, miscarriages and permanent vision damage have been uniformly refuted by several scientific investigations. But prompted by the kind of information produced by 9 to 5, Congress and a number of state legislatures are investigating VDT safety and considering bills on work place automation.

Alford, for her part, said she has little doubt that VDT use causes long-term, serious health problems. She described her co-workers suffering from nightmares, depression, irritability, nervousness and other stress-related problems she attributed to VDT use. Then she added, "Recently, I gave birth to a child with multiple defects. I cannot help but think there is a connection. Though other women in the office have so far been spared this tragic consequence, a significant minority of pregnancies have resulted in miscarriages."

Alford is a representative of the Service Employees International Union (SEIU), which is allied with 9 to 5. Also appearing before the subcommittee was Jackie Ruff, SEIU district director, who said the 9 to 5 data cannot be dismissed as "statistical quirks." She reiterated the group's call for government investigation of VDT-related vision problems, back and muscle strain and what she called "a near epidemic of stress-related diseases."

Elaborating on these complaints,

Alford described for the subcommittee the working environment of about 70 Equitable clerical employees, "primarily women of child-bearing years, who work from eight to 10 hours a day, sitting in long rows at impersonal workstations dominated by video display terminals" processing insurance claims.

She said many of the workers "have noticed the deterioration of our vision since working on the terminals. . . . At home, after a day on the tube, I have a difficult time focusing on close objects. My eyes frequently tear and sting. Only after a weekend away from the terminal do

my eyes begin to feel better."

Alford complained that "in our office, the windows cannot be opened. The intense heat of the VDT combined with dirty air creates a stifling environment. Simple requests to clean the curtains to remedy some part of the problem have been denied, and many employees consequently suffer from dry, flaky skin, rashes and light-headedness.

"Back and neck problems abound," she continued, "a result of tubes, chairs and desks that we cannot adequately adjust and of long hours sitting in one position. Getting up and moving around during the day

to alleviate cramping and stiffness and give our sore eyes a rest is discouraged and, in fact, is penalized since our machines are electronically monitored for productivity."

Noting VDT use is only just beginning, Alford called the Equitable workers "guinea pigs. Judging from the severe problems surfacing already, we may be headed for a society of victims of VDT-related diseases and disabilities." In the absence of collective bargaining for most clerical workers, she said, "strong legislation is needed to provide all VDT users with basic protection."



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## NEWS

# Consultant sees big business in bypass tech

By Phil Hirsch  
CW Washington Bureau

WASHINGTON, D.C. — Recent developments in technologies to bypass local telephone networks may spawn a multibillion dollar business, according to a communications consultant.

However, Jerome Lucas added, about 70% of the revenue produced by bypass facilities in 1994 will be earned by telephone companies rather than by their competitors.

During a seminar here last week sponsored by his market research company, Telestrategies, Inc. of McLean, Va., Lucas offered some predictions on future communications markets. By 1994, he said, CATV, microwave, satellites and other local exchange bypass technologies will be earning \$10.7 billion per year; in 1984, by comparison, the total will be \$106 million. He expects that optical fiber will account for 65% of the 1994 revenue; CATV and microwave will each have a 15% share, while satellites will account for the remaining 5%.

MCI Communications Corp., one example of a commercial carrier sampling the bypass waters, is testing a bypass system in Fort Lauderdale, Fla., that uses CATV to route analog voice traffic around the local telephone network, Lucas reported here last week.

AT&T and the recently divested Bell operating companies will become

major factors in the bypass business, Lucas added. The former has already announced plans to offer "shared multitenant services," one form of bypass, in collaboration with United Technologies Corp., and the local telephone operating companies have requested permission from the Federal Communications Commission to offer digital termination services (DTS), another local exchange alternative.

Lucas expects the carriers to explore a number of other options in the next few years. He specifically mentioned local telephone operating company investment in local CATV networks, efforts by both AT&T and the local telephone operating companies to become communications resellers outside their present markets and use of AT&T's No. 4 Electronic Switching System network switch as a digital private branch exchange replacement for Centrex facilities provided by the local telephone operating companies.

The FCC's latest revision of its access charge plan is almost certain to encourage greater bypass, Lucas said. By deferring access surcharges for residential and small-business users, the commission has made it necessary to increase the usage-based access charges to be levied on inter-exchange carriers and paid by their customers, he explained. Reportedly, the deferral means that the latter

charges must be increased enough to raise an additional \$2 billion annually. Business users will pay most of this increase.

Lucas also predicted that by 1992, 89% of all U.S. households will be passed by CATV systems, vs. 43% today, and 60% of all those passed will be subscribers, vs. 48% today. These figures suggest the possible impact of systems like MCI's new Cablephone, which divides a 6 MHz cable TV channel into 240 voice channels capable of servicing 2,400 users.

Several other emerging alterna-

tives to the local telephone network were also mentioned at the conference.

Michael Shiff, satellite equipment marketing manager for M/A-Com DCC, Inc. of Germantown, Md., reported his company has developed a "personal earth station": a two-way, 1.8 meter in diameter dish antenna which reportedly can be installed in six hours and can communicate directly with a Ku band (14/12 GHz) satellite. The uplink data rate is 9.6K bit/sec, and the downlink rate is more, Shiff said.

## Computer Graphics '84 slated

ANAHEIM, Calif. — Computer Graphics '84, the fifth annual conference and exposition sponsored by the National Computer Graphics Association (NCGA), will be held May 13-17 at the Anaheim Convention Center.

The conference reportedly will feature 25 tutorials and more than 70 technical sessions on more than 20 computer graphics topics, with an emphasis on microcomputers.

The exposition is expected to showcase computer graphics technology for use in computer-aided design and manufacturing, management, cartography, structural analysis,

medicine, animation, marketing and architecture.

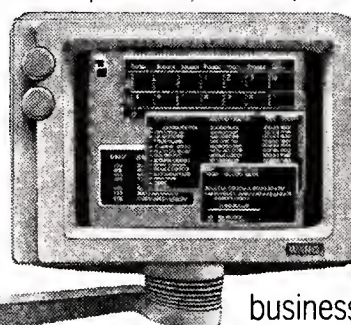
Pre-registration for the exhibits is free, while on-site charges range from \$10 to \$20. Fees for the tutorials range from \$185 to \$355 and for the technical sessions from \$235 to \$460, depending on the number of sessions attended. Discounts are available for members of the NCGA and the Institute of Electrical and Electronics Engineers, Inc.

More information on Computer Graphics '84 is available from the NCGA, Suite 601, 8401 Arlington Blvd., Fairfax, Va. 22031.

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## NEWS

# Another review seen on access charge plan

By Phil Hirsch  
CW Washington Bureau

WASHINGTON, D.C. — Another reconsideration of the Federal Communications Commission's access charge plan may be necessary, the chief of the commission's Common Carrier Bureau, Jerald N. Fritz, said here last week. If that happens, the new, higher rates proposed by AT&T and local telephone companies could be deferred beyond April 3, their presently scheduled effective date.

Fritz, who spoke at the Bypassing Access Charges conference sponsored by Telestrategies, Inc., said, "We've just issued the second reconsideration of the access charge order, and from recent reported statements of [AT&T Chairman Charles Brown], we could be looking at a third." He

was referring Brown's statement that the commission's latest revision of the access charge plan is unfair to AT&T because it doesn't charge the company's competitors enough for use of local telephone network facilities. AT&T has asked the commission to reconsider this part of the plan.

Fritz said that much has to be done by both the commission and the commercial carriers if present rates are to be replaced with pending, access-charge-based tariffs next month. Both AT&T and the National Exchange Carriers Association, for example, have to resubmit the tariffs they filed last October, and the commission staff must analyze this material and recommend action to the commission. The size of the task is suggested by the fact that when the

original tariffs were filed last October, they totaled 210,000 pages.

Asked what would happen should the FCC not meet the April 3 deadline, Fritz said, "We'll cross that bridge when we come to it."

Another conference speaker, economist Alan Pearce, indicated that efforts to restructure intrastate communication services have made even less progress than federal efforts.

One key question, he said, is whether state or federal regulators should decide if local telephone carriers can offer inter-Lata (Local Access and Transport Area) services. If they can, it would be a valuable source of additional revenue and could benefit ratepayers, he added.

As most states contain more than one Lata, the related traffic is intra-

rather than interstate. However, the Modified Final Judgment, which settled the government's antitrust case against AT&T, specifically bars the divested Bell operating companies from offering inter-Lata services. Pearce believes the U.S. Supreme Court will have to resolve this question.

Another issue is whether inter-Lata carriers such as AT&T Communications, MCI Communications Corp. and GTE Telenet Communications Corp. will be allowed to offer intra-Lata services. Pearce said the carriers are now "winning and dining" key officials in an attempt to gain entry into various intra-Lata markets. Competition is now allowed by five states, and studies to allow competition are under way in several others.

# Va. lawmakers pass categorical computer crime bill

By Paul Korzeniowski  
CW Staff

RICHMOND, Va. — The Virginia state legislature overwhelmingly passed a computer crime bill that renders obsolete current legislation and clearly defines categories of computer crime. The bill awaits the signature of Gov. Charles S. Robb, after which it will become effective July 1.

Sponsored by the Virginia League of Savings Institutions, the bill divides offenses into five categories: computer fraud, trespassing, invasion of privacy, threat to security and forgery. "The law clearly labels categories of crime that previously didn't exist," said Daniel R. Burk, an attorney with Thomas and Fiske P.C., the Alexandria, Va., law firm

that represented the league. "It is designed to stop anyone who uses a computer for an illegal activity."

Minimum sentences for persons convicted under the new law range from a \$500 fine to a five-year prison term.

"There is a wide range of sentences which helps to ensure that the punishment fits the crime," accord-

ing to Burk.

To draft the bill, Burk studied computer crime bills currently in place in 21 states. "We wanted to ensure that the bill had comprehensive, clear language," he said.

One issue that the new bill does not address is illegal copyrighting. "We may explore that issue next year," Burke noted.

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## NEWS

# U.S. sting nabs alleged high-tech smuggler

By Patricia Keefe  
CW Staff

NEW YORK — A U.S. Department of Commerce sting operation has netted a French national who allegedly attempted to export a graphics plotting system, which can be used to design integrated circuits for advanced weapons, to an Eastern-bloc country.

The arrest, made late last month here, marks the second successful undercover operation against high-technology smugglers in less than two weeks and involves technology similar to that which was illegally shipped to the Soviet Union in 1979 by Richard Mueller, a West German,

according to Commerce. Earlier this month, a U.S. Customs Service sting operation resulted in the arrest of five people, including a Chinese national, on charges of conspiring to smuggle high-tech equipment into China [CW, Feb. 20].

Gilles Gouzene, 28, has been charged with conspiracy and attempting to export without a proper license, according to Assistant U.S. Attorney Peter Norling. At press time, Gouzene had not met his bail, which had been set at \$50,000. A grand jury is scheduled to look into the case, and a hearing was held March 1 to determine whether Gou-

zene should be held for trial.

Gouzene, an employee of the Paris-based import and export firm of Exportations Industrielle et Agricole (EIA), was arrested Feb. 23 in a hotel near John F. Kennedy International Airport here. EIA is owned by Gouzene's father, Pierre, who is alleged to have taken part in the scheme, although no charges have been filed against him.

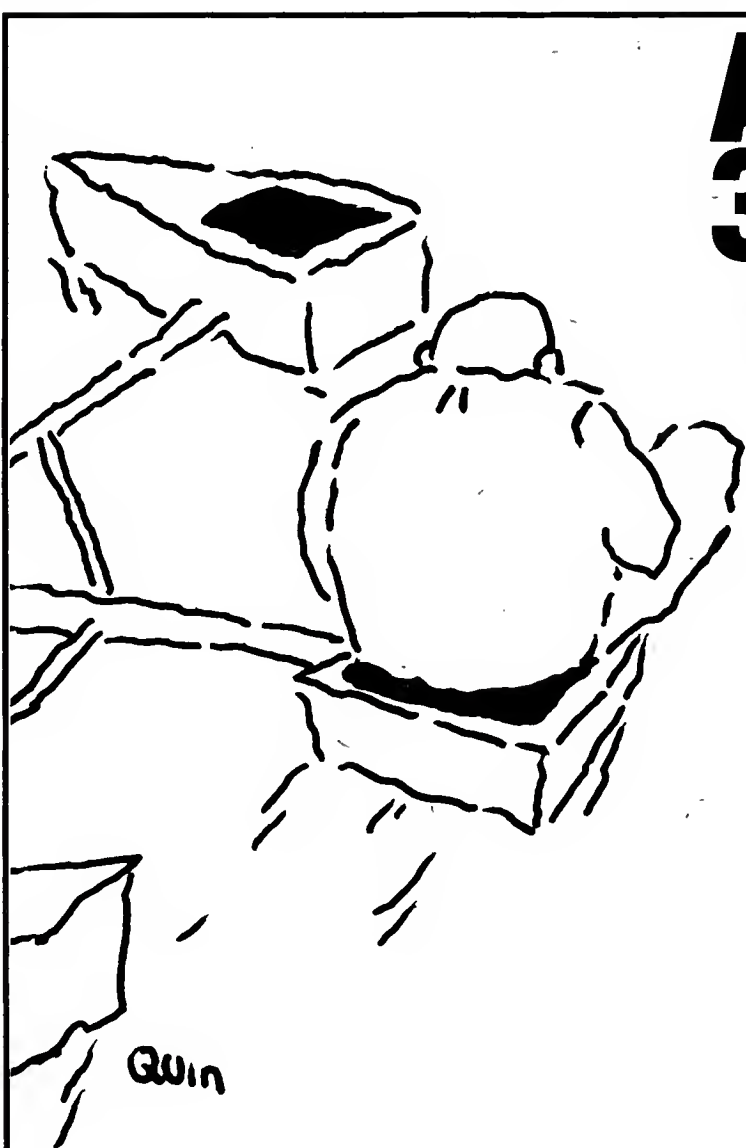
Anstruther Davidson, acting director of the Office for Export Enforcement, explained that Commerce agents never actually met the father. Instead, they allegedly communicated over the phone and via cablegrams

with someone who said he was Pierre Gouzene. The senior Gouzene is believed to be in France, whose extradition treaty with the U.S. does not consider technology smuggling.

The Gouzenes first came to Commerce's attention in March 1983, after they allegedly falsified an export license application for a Xynetics, Inc. Model 2000 Graphic Plotting System valued at \$145,000. When the equipment arrived in France, "individuals associated with the export realized that the true destination was not India [as stated on the license], but an unnamed Eastern-bloc country," Davidson said. As a result, the machine was returned to the U.S. Davidson said he did not know whether the French government was formally involved in the decision to return the system.

It was at this point that the Commerce sting went into operation. Agents acting as brokers for the resale and exportation of the system were allegedly offered \$5,000 to ship the system illegally. When they cabled the senior Gouzene that a second export license for the system had been denied, he is alleged to have cabled back, "You were recommended for this affair. We expect you to deal with this effectively . . . you knew from the start the difficulties you could meet," Davidson said.

Gilles Gouzene was arrested after a series of meetings during which the \$5,000 fee was discussed, although no money ever exchanged hands, Norling said. Both Norling and Davidson declined to comment on whether the EIA and the Gouzenes are suspected to be part of a larger smuggling operation.



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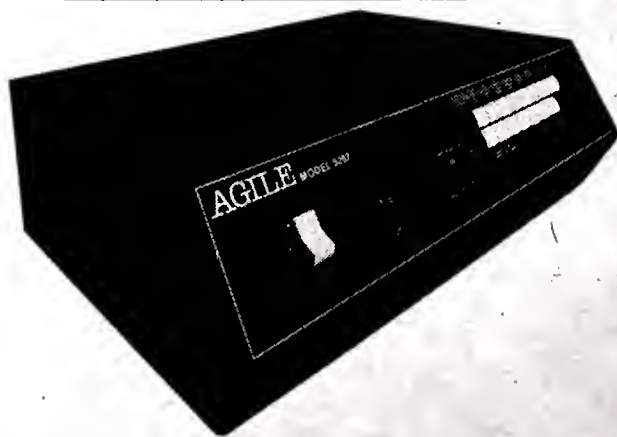
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Contributions being sought for the Special Report should take one of two forms: a tutorial article discussing an issue or trend in software productivity or a user application story outlining a particular firm's experience with a product or methodology.

Articles must be typed, double spaced and no longer than eight pages. Artwork, such as charts, graphs or photographs, is encouraged. Authors should also include with their articles a brief biography and a telephone number where they can be reached.

The deadline for submissions is March 28. If you have a tale to tell, address it to Donovan White, Special Reports Editor, *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.



## NEWS

# Spreadsheets help micros upset mainframes



## PRODUCT SPOTLIGHT

By Paul Gillin  
CW Staff

*"Mainframe vendors have been trying to reach out to the end user for years. It took the micro people to come along and teach us how."*

*Ed Spire, president, Dynasoft, Inc.*

After years of trying to look like mainframes, microcomputers have finally turned the tables on their big brothers. Spreadsheets, the financial analysis software that single-handedly legitimized the micro in business, are being installed with increasing frequency on large systems.

The success of this upward migration has exceeded the expectations of most observers. In the barely three years that large system spreadsheets have been available, they have garnered a base of more than 3,500 users in the IBM mainframe community alone, according to vendor estimates. And they have set the stage for further integration, which could soon make applications available on the mainframe that are substantially similar to some of the most popular integrated software on the micro.

Vendors interviewed by Comput-

erworld expressed heady optimism about the growth potential of large system spreadsheets. Some expect to expand capabilities to include data base management, word processing, integrated graphics and even voice recognition. However, some observers are not so sure.

"Ultimately, all spreadsheet tools will be on the personal computer," said Rick Swanberg, manager of technical planning and operations at Index Technology Corp. in Cambridge, Mass. "Now, because every office doesn't have a [personal computer], people accommodate and go to the mainframe. But eventually, the mainframe spreadsheets are going to offer download to the [personal computer] for responsiveness and upload for consolidation."

### Software gaining momentum

But for the short term, at least, the software seems to be gaining momentum. The popularity of large system spreadsheets is largely due to four factors. One factor is political: MIS departments are frantically searching for a way to regain the control they lost when users became enchanted with the fast, dedicated processing power offered by micros. "MIS managers are tired of popping for \$5,000 for another [personal computer] every week," Ed Spire, president of Dynasoft, Inc. in Chicago, said. "They'd rather hook into the

data base and not have data sitting around in briefcases."

Another major incentive is cost. With prices of even the largest spreadsheets running less than \$20,000, the option appeals to some managers who want to protect their existing base of terminals. "There are over four million [IBM] 3270-type terminals out there," said Randy Whitesides, vice-president of The Mega Group, Inc., the Irvine, Calif.-based vendor of Megacalc, a spreadsheet for IBM mainframes. "This has given MIS the ability, with very little money, to make them useful."

Security is also an issue. The new popularity of micro-to-mainframe links has presented the potential headache of users downloading sensitive corporate data onto a diskette that is then left on a desktop or stuffed into a briefcase. Mainframe products retain data integrity while preventing information leaks. Tower Systems International, for example, first planned to make its Omnicalc package a feature of its Surveillance IBM CICS security system. But response to initial advertisements was so overwhelming that the company released the software as a stand-alone application. "Our best salesmen are DP staffs, because they want to control their empire," Greg Collins, vice-president of marketing and sales, said.

The fourth and most disputed ad-

vantage is sheer power. With models ranging up to virtually unlimited size, dozens of mathematical functions, interfaces to other host software and three-dimensional and consolidation capabilities, large system spreadsheets offer advantages many micro packages cannot approach.

### Micro limitations

"The micro spreadsheets haven't been good at solving the problem because they're oriented toward putting it all in one box," said William Peake, president of Unicorp, which markets Unicalc for IBM mainframes. "End users will use the micro if they don't need the mainframe capabilities. But they find they're quickly frustrated by the limits of micro spreadsheets."

However, others are not as quick to concede the power issue to the mainframe. "If you look at how quickly a spreadsheet has to operate, the micros are simply faster," said Alan Hirsch, a group managing editor at Datapro Research Corp. and principal author of the report "All About Electronic Spreadsheets."

Hirsch said micro spreadsheets offer nearly all the capabilities of their large system counterparts, but are easier to use and more flexible. Companies that install their spreadsheets on the central computer for the purposes of short-term cost savings or

See SPREADS page 15

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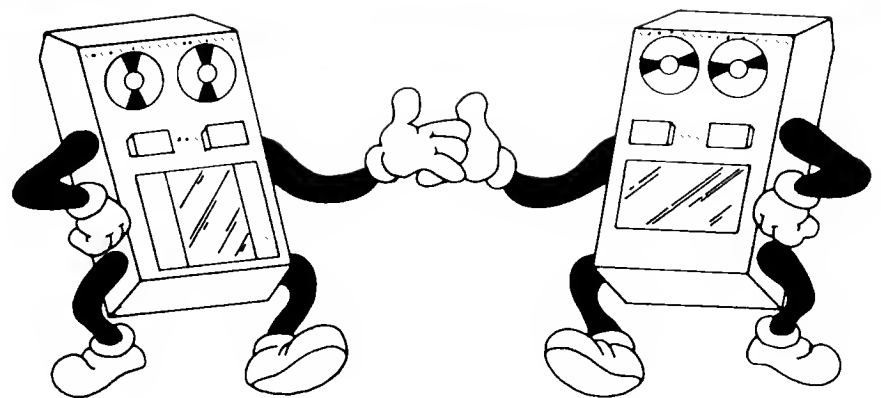
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## NEWS

# Spreadsheet usage shifts toward micros



## PRODUCT SPOTLIGHT

By Paul Gillin  
CW Staff

Large system spreadsheets are not everybody's cup of tea. While some users rave about them, others are finding that microcomputer versions offer better response time and greater flexibility.

Two users of large system spreadsheets interviewed by *Computerworld* reported dramatically different reactions to the software in their installations.

At Saks & Co. in New York, which owns the Saks Fifth Avenue retail chain, Oxford Software Corp.'s Maxicalc has "made our lives much easier," according to Mary Anne Kern, director of financial analysis.

However, Johnson & Johnson Corp. of Raritan, N.J., has seen enthusiasm wane for its Business Model Systems, Inc. Business Modeler package since micros began making inroads into its subsidiary companies, said John Harsh, international management services consultant.

Saks has about 20 users tied into Maxicalc from locations as far away

as San Diego, Kern said. The software supports all levels of users in areas including personnel, accounting and operations. The company plans to distribute Maxicalc access to about 50 users, including managers of most retail stores, who will employ pre-designed spreadsheet templates.

### Better flexibility

Saks installed Maxicalc last August after testing it against Tower Systems International, Inc.'s Omnicalc. Maxicalc proved to be the easier of the two to use and included the flexibility to recalculate on demand rather than automatically, Kern said.

A mainframe spreadsheet was considered "because we didn't want the proliferation of micros that didn't interface with our mainframes," Kern noted. Originally purchased solely for the financial analysis operation, Maxicalc is now used in that division for analysis of capital projects, productivity analysis and profit and loss statements. In other divisions, the software is used to control budget goals, analyze payroll and generate daily management reports.

"The important thing is that we now have control," Kern stated. "I've also been pleasantly surprised with the flexibility of the system. You can delete rows and columns with auto-

matic calculation adjustment and you can control formatting to a great extent. It lets you put out a good-looking report with very little effort."

She noted that user demands for microcomputers have dropped since the software was installed. "I haven't heard of any new requests for the last two months or so," she said. "I think users seem to be willing to wait and see how this goes first."

Kern's only complaint about Maxicalc is that individual spreadsheets cannot be copied into other spreadsheets. However, she said that feature is slated for a future enhancement.

Johnson & Johnson has owned a corporate license to distribute Business Modeler to its international subsidiaries since 1980. The company's management information center currently supports about 45 copies around the world, mostly on IBM System/34s and System/38s.

"When we first brought it in, a lot of companies were very excited about it," Harsh said. "But we're finding out now that many aren't using it as much as they originally intended."

Micro packages apparently present a more attractive alternative, he said. "I don't think Business Modeler is as easy to use as the company says

it is," he said. "In companies where micros are coming in, they're discontinuing Business Modeler." He added that in a recent questionnaire, most subsidiary companies did not request the newest release of the software.

Although Business Modeler is a powerful package, "It's not the type of power most users would be able to deal with themselves," Harsh said. "It's useful for something like an interface to the data base or other files. But DP still has to come in for that."

### Step-oriented

In addition, Business Modeler is "very step-oriented," Harsh added. "You have to define titles, column headings and line entries. And after you've done all this, you still haven't put in any data."

Nevertheless, some subsidiaries are still gung ho on Business Modeler, he noted. For example, Ortho Pharmaceutical, Inc. of Toronto runs its general ledger on the spreadsheet and uses it for net profit analysis by product group, commercial expense allocation and sales division reporting.

"We will continue to support the user companies," Harsh said. "But in the future, we would probably recommend personal computer tools instead."

Vendor Name	Operating Environment	Compatible with which micro Spreadsheets <sup>1</sup>	Worksheet size (cells)	Windows (Max. No.)	Cell-level security	Special Functions <sup>2</sup>	Decimal places	Price
Access Technology, Inc. <i>Supercorp 20</i>	IBM VM/CMS, Unix, minis from DEC, DG, Prime	Acess Tech. 20/20, Visicalc, Lotus 1-2-3	1,000 X 1,000	2	locking	43	14	\$12,500 — VM \$4,800 — other versions
Business Model Systems, Inc. <i>Business Modeler</i>	DOS, MVS, w/CICS most major minicomputers	Business Modeler	9,999 X 97 X 9,999	2	None	70	6	\$18,000 — DOS \$25,000 — MVS
Chicago Soft/Dynasoft <i>Dynacalc</i>	MVS/TSO VM/SP/CMS	Visicalc	999 X 702	2	protected	41	15	\$8,500 — CMS \$8,500 — TSO
Enhancement Software Co. <i>VSECalc</i>	CICS, DOS/VSE	None	Unlimited	2	protected, hidden, locking	44	16	\$3,500 — on-line \$2,500 — subroutine \$2,500 — batch
Hewlett-Packard Co. <i>Visicalc/3000</i>	HP 3000/MPE	Visicalc	254 X 254	Limited by screen	protected, hidden	35	16	\$2,500
Honeywell, Inc. <i>Personal Computing Facility (PCF)</i>	Gcos, Gcos8	No	60,000 X 60,000 character up to 16,700 fields	17	None	66	60	\$200/mo including maintenance
Hourglass Systems, Inc. <i>Calcmaster</i>	Wang MVP, LVP, SVP, VP, VS	None	64 X 999	64	protected, locking	53	8	\$495
IBM <i>Oxycalc</i>	MVS/TSO, VM/CMS	N/A	132 X 32,000	Limited by screen	protected, hidden	37	15	\$8,000
Logitech, Inc. <i>Logiplan</i>	DEC VAX-11 under Unix	Visicalc	2,500 X 2,500	9	No	24	9	\$1,200 — object code \$3,500 — source code
The Mega Group, Inc. <i>Megacalc</i>	MVS/TSO VM/CMS	Visicalc, Supercalc Lotus 1-2-3	702 X 9,999	150	hidden	50	16	\$15,000 — purchase or \$375/mo
Oxford Software Corp. <i>Maxicalc</i>	DOS/VSE, OS/VS	None	64 X 512	None	protected, hidden	N/A	15	\$9,000 — DOS \$12,000 — OS
Parallax Systems, Inc. <i>Execucalc</i>	VM, MVS	Visicalc Software Arts DIF	702 X 999	2	formula, column	30	16	\$5,000
Saturn Systems, Inc. <i>Saturn-calc</i>	DEC PDP-11, VAX-11	Ascii-based	16,384 cells variable matrix	2	protected, encrypted	26	15	\$489 — RT-11 \$978 — PDP-11 \$1,956 — VAX-11
Sperry Corp. <i>Sperry Calc</i>	Sperry 1100 series	None	511 X 511	2	protected	48	9	\$5,000 — \$7,000
Tower Systems International, Inc. <i>Omnicalc</i>	CICS, VM/CMS, TSO	None	32,768 cells variable matrix	22	protected	36	5	\$4,600 — DOS/CICS \$6,500 — OS/CICS \$5,500 — CMS \$6,500 — TSO
Trax, Inc. <i>Electronic Spread Sheet</i>	VM/CMS, MVS/TSO	Visicalc, Lotus 1-2-3	1 million X 1 million	Unlimited	protected, hidden, attributes	29	127	\$220/mo \$2,400/yr
Unicorp <i>Unicalc/DB</i>	OS, DOS, VM	Visicalc Lotus 1-2-3	Unlimited	Limited by screen	protected	27	15	\$19,500


<sup>1</sup> File-level compatibility with upload/download capabilities

<sup>2</sup> Common function categories include algebraic, financial, arithmetic, statistical, trigonometric, programming, spreadsheet, truncation and editing

<sup>3</sup> Common options include dollar sign, floating decimal, commas, negatives, percentages, rounding, justification, highlighting, underlining and blinking cells



# Host system spreadsheet vendors eye future

 **PRODUCT SPOTLIGHT**

Caught in a market that may soon start shrinking in the face of competition from micros, vendors of host system spreadsheets are planning to add new functions to their software to keep it attractive to large DP installations.

Unicorp President William Peake believes large system spreadsheets have the potential to become the primary user interface of the information centers of the future. His compa-

ny's Unicalc is based on a Codasyl model network data base management system (DBMS), in which "the matrix is really a series of records that relate to each other," he said. That feature could make Unicalc useful in writing medium-size application programs.

In the immediate future, Unicorp plans to build a "personal DBMS" on the mainframe, similar to Radio Shack's Profile. The software will allow users to view individual data bases through the spreadsheet and construct small applications without tying up the mainframe DBMS.

The Mega Group has recently added three-dimensional consolidation

to its Megacalc spreadsheet, upload and download facilities to the IBM Personal Computer through Megalink and a relational filing system called Megafile. Graphics facilities are planned for the future, a spokesman said.

Tower Systems International, Inc. will "get into a more integrated approach," with its Omnicalc spreadsheet, according to Greg Collins, vice-president of marketing and sales. Future enhancements will include an interface to IBM's Graphic Data Display Manager, word processing, interfaces to popular DBMS and a Basic compiler to allow users to write their own Basic subroutines.

Business Model Systems, Inc. plans "a big thrust into the micro arena," with a recently announced version of its Business Modeler spreadsheet for the IBM Personal Computer, according to Marketing Director Ken Kay. Another project will be to provide a direct tie-in for file transfer between Business Modeler and the DBMS in the user's shop, he said.

Business Model Systems is also researching the area of voice recognition, allowing the user to perform basic spreadsheet functions by simple voice commands. However, Kay admitted the technology to allow voice interaction is still two to three years away.

## SPREADS from page 13

MIS control are shortsighted, he said. "Companies that have identified personal computers as the way of the future for productivity increases and [IBM] 3278 emulation are more enlightened than others," he said.

The market seems to bear out Hirsch's remarks. "The micros are really eating into our market share," said Ken Kay, marketing director at Business Model Systems, Inc., which markets Business Modeler, one of

the first large system spreadsheets to be released. "Prior to that, we were going great guns."

Large spreadsheet vendors have chosen to accommodate rather than fight the micro. Promoting the optimal capabilities of the mainframe, they promise easier access to host data bases, interfaces to general ledger and other critical applications, work sheet consolidation, query languages and file-level compatibility with popular micro spreadsheets. "It's a lot more than just a spreadsheet calculator," said Marian San-

ford, principal engineer in the Large Computer Products Division at Honeywell, Inc.'s Personal Computing Facility in Phoenix.

Consolidation has proven to be one of the most popular capabilities of the host spreadsheets. "If you have 15 different people putting together budgets, you can pull that all together very quickly and easily," Index Technology's Swanberg said.

However, that function, too, will soon fall prey to improved micro software, and most observers agree that the host spreadsheet market is head-

ed for a shakeout. In response, the vendors are planning to build a variety of new applications on top of their existing products (see related story). But the true winners will probably be those vendors that fare best at accommodation.

"The winners will be the ones that write spreadsheets so you can work in the same command syntax in both a [personal computer] and mainframe environment and transfer easily between the two, as well as to other software such as word processing and data base," Swanberg said.

Vendor Name	Users	3-Dimensional Capabilities	Interface to Graphics Packages	Consolidation	User-defined functions	Cell-level formatting options <sup>a</sup>	Source code	Additional features
Access Technology, Inc. <i>Supercomp 20</i>	1000	Limited	Yes	Yes	Limited	7 options	C	Natural mode recalculation, Iterative goal-seeking User-defined command files, Portable
Business Model Systems, Inc. <i>Business Modeler</i>	>600	Yes	No	Yes	No	Limited	Cobol	Versions for entire IBM line, User-defined, multiple-level consolidation, 2-level ease-of-use features, iterative goal-seeking
Chicago Soft/Dynasoft <i>Dynacalc</i>	150	No	Yes	Yes	No	13 options	Assembler	Sort by multiple keys, Cell naming, Stored commands, Redefinable PF Keys, Report extraction
Enhancement Software Co. <i>VSECalc</i>	15	No	No	Yes	Yes	6 options	Assembler	Base index capability, Tutorial
Hewlett-Packard Co. <i>Visicalc/3000</i>	N/A	No	Yes	No	No	13 options	Pascal	File & command-level compatibility with Visicalc Visicalc superset also runs on HP 150, Integrated with other HP 3000 software
Honeywell, Inc. <i>Personal Computing Facility (PCF)</i>	170	No	No	Yes	Yes	6 options	Assembler	Hard copy printing, Free-formatted forms Audit trails, Supports VIP 7800 terminal graphics Help examples
Hourglass Systems, Inc. <i>Calcmaster</i>	N/A	Yes	Optional	Yes	No	6 options	Basic	Split screen enables menu-type prompts
IBM <i>Oxycalc</i>	>50	No	Yes & Integrated	No	No	7 options	PL/I	N/A
Logitech, Inc. <i>Logiplan</i>	>10	No	No	No	No	5 options	C	Interface with University of Calif. at Berkeley's Scribe word processing, Files accessible with Unix commands, Portable
The Mega Group, Inc. <i>Megacalc</i>	100	Yes	Yes	Yes	Yes	10 options	Assembler, PL/I	Color graphics, 3-D arrays up to 35 sheets in memory, Full directory support, Macro commands Data conversion to and from micros
Oxford Software Corp. <i>Maxicalc</i>	250	No	Integrated graphics	No	Yes	7 options	Assembler	Mainframe & CICS printer support, Videotape training included, Compatible with Oxford security system, Telephone support
Parallax Systems, Inc. <i>Execucalc</i>	150	No	Yes	No	Yes	5 options	APL	Upload/download with Visicalc Diagnostic messages
Saturn Systems, Inc. <i>Saturn-calc</i>	>500	No	Yes	Yes	No	9 options	Macro-assembler	"Designed for speed," Ascii file structure, Call routines to Ascii files, Chained spreadsheets
Sperry Corp. <i>Sperry Calc</i>	>100	Yes	Yes	Yes	Yes	9 options	Fortran & Assembler	Duplicate cells with auto adjustment, Tab to cell or enter from central spot, Calculations by row or column, Table handling for lookup, search, index, Synchronized screens,
Tower Systems International, Inc. <i>Omnicalc</i>	>950	Yes	Yes	Yes	Yes	8 options	Assembler & Cobol	Supports most European languages, On-line and utility print functions, Pseudo-conversational in CICS, Replication of formulas & data
Trax <i>Electronic Spread Sheet</i>	100	No	Yes	Yes	No	N/A	Assembler	Command-level Visicalc compatible, Numbers from 10 <sup>27</sup> to 10 <sup>-27</sup>
Unicorp <i>Unicalc/DB</i>	20	Yes	Yes	Yes	Yes	7 options	Basic assembly language	N-dimensional, Master terminal administration, Librarian function for archiving

The list of vendors represented here was assembled from the forthcoming International Data Corp. report "Requirements for Decision Support: Trends in the 1980s" and represent as complete a collection of large system spreadsheet vendors as was available. For the purposes of this report, large systems are defined as ranging from superminis to mainframes. Vendors were asked to list their offerings in each area and to provide up to five additional capabilities not included in the chart. The micro spreadsheets mentioned here are Lotus Development Corp.'s 1-2-3 and Visicorp's Visicalc.



## NEWS

# 'Third era' of info systems — DSS — examined

By John Gallant  
CW Staff

BOSTON — Choosing the proper hardware and software tools is only one phase in successfully implementing and managing decision support systems (DSS) in the "third era" of information systems.

## CW AT SOFTWARE TOOLS

That was the message from Gary K. Gulden, keynote speaker at last week's Software Tools for Distributed Decision Support Systems conference held here.

Gulden, vice-president of Index Systems, Inc., described the first era of information systems as the automation of clerical functions, such as transaction processing. The second era involved the use of large processors for operational control of such functions as inventory management and shop-floor control, he said.

We are now in the third era of information systems, he continued, the age of end-user computing — or DSS — for managerial planning, decision making and "mind support." Control in the third era has slipped from the "high priests" of data processing, requiring a unique management focus to utilize and control the new information systems successfully.

"The end users' needs are old, and the management support systems (MSS) are relatively new," Gulden said. "Reliance on invisible forces is

not enough to ensure that you are getting value from these systems in the proper places within your organization."

Organizations typically pass through three phases in the growth of MSS, according to Gulden. The initial phase involves learning, encouragement and experimentation, and it leads to the second phase, in which management attempts to assess the rewards of end-user computing. The third phase is one in which management seeks to regain control, often as a result of the unbridled growth of MSS.

Most companies tend to focus too much attention on the first and third phases, Gulden said. "There is usually a great fanfare about getting started, then it becomes very important to get control. But there isn't enough attention focused on getting value from these systems. Often, people assume that aspect of MSS will just take care of itself, and that is a mistake."

### 'Find high-impact areas'

In order to develop what Gulden described as a well-balanced approach that ensures both control and value, management must uncover those areas within the organization that will benefit most from end-user computing. "You must find the high-impact areas, those functions within

the firm where it makes sense to apply these tools. You must learn to access these so-called markets in your own company. They may not be the obvious ones, but they may have a much greater strategic impact."

One method for doing just that, Gulden explained, is to apply the Critical Success Factors (CSF) approach espoused by Dr. John Rockart, a professor at MIT [CW, April 18]. According to Gulden, CSFs are those key areas within a business in which high performance is essential if ob-

jectives and goals are to be met. Once the CSFs are identified, MSS tools can be targeted to the proper areas within an organization.

"The CSF technique is a tool for sniffing out high-payoff opportunities for MSS. Most firms, for example, tend to concentrate MSS on the analytical staff. That is an internal market segmentation. But it may not be the area of greatest payoff. The CSFs may point out that your functional and general managers are a valid market for MSS also," Gulden said.

## PRC urges increase in Ecom rates

WASHINGTON, D.C. — A hefty increase in Electronic Computer-Originated Mail (Ecom) rates is needed to recover the service's costs and prevent Uncle Sam from competing with private industry, the U.S. Postal Rate Commission (PRC) recommended late last month.

The commission said the new rates for the controversial service should be 52 cents for the first page and 15 cents for the second. Currently, Ecom charges 26 cents for a one-page message and 31 cents for a two-page message; the U.S. Postal Service had proposed rates of 31 cents and 40 cents, respectively. Although Ecom's critics

said the PRC has sounded Ecom's death knell, the commission contended the service could begin making a profit in fiscal 1986.

While it greatly increased the Postal Service's proposal for new rates, the PRC endorsed two other requests without change: One would do away with the present requirement forcing Ecom users to send at least 200 messages at a time; the other would allow users to include a business reply envelope. Before the recommendation can be implemented, it must be considered by the Postal Service's board of governors, which is scheduled to meet here tomorrow.

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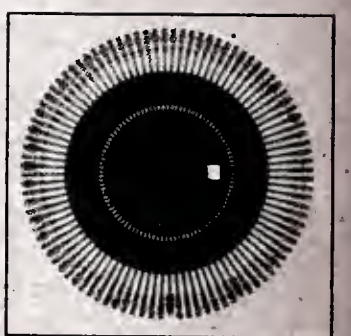
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| 30   | Medicine/Law/Education  |
| 40   | Wholesale/Retail Trade  |
| 50   | Business Service (except DP)  |
| 60   | Government—State/Federal/Local  |
| 65   | Public Utility/Communication Systems/<br>Transportation               |
| 70   | Mining/Construction/Petroleum/Refining                                |
| 75   | Other User  |
| <b>Vendors</b>                             |   |
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**3. COMPUTER INVOLVEMENT (Circle all that apply)**  
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- A. Mainframes/Superminis
- B. Minicomputers/Small Business Computers
- C. Microcomputers/Desktops
- D. Communications Systems
- E. Office Automation Systems



## NEWS

# DSS execs urged to make blueprint for future

By John Gallant  
CW Staff

BOSTON — Decision support systems (DSS) personnel must become architects, providing the blueprints for future data, communications and management structures within their organizations.

Speaking at last week's Software Tools for Distributed Decision Support Systems Conference here, Peter G.W. Keen said DSS management's role is to develop a migration path that will allow organizations to take advantage of future technological advances. Management must be flexible enough to use current DSS tools without becoming locked into them.

"It is a grave mistake to focus only on DSS software or hardware. We need to focus on architecture, to look ahead and shape a base for the future. We need a DSS infrastructure blueprint that will allow us to evaluate opportunities in the coming years, that will allow us to migrate to new technologies," according to Keen, a visiting senior lecturer at the London School of Business and former chairman of the Cambridge, Mass.-based Micro Mainframe, Inc.

In designing a data architecture, Keen said, DSS management is faced with the threatened shakeout among micro manufacturers, a choice between competing operating systems and limited micro-to-mainframe links and deciding whether to select software for a 16- or a 32-bit arena.

## Prepare for integration

The communications architecture involves an additional set of difficult choices, according to Keen. DSS personnel must prepare for the integration of voice, data and image; select among services offered in the recently deregulated marketplace; and choose between differing communications standards, such as those for local-area networks.

Keen cautioned that "architectural decisions" based on wrong as-

sumptions can be costly, but planning is critical to ensuring that both hardware and software provide the necessary migration path to new technologies. That planning is also essential to accommodating increased system traffic in the future. "Whoever

builds these architectural highways must fuel innovation without losing control," Keen said.

Perhaps more important than the data and communications architectures is the organizational or management structure that supports DSS, Keen said. He said DSS and data pro-

cessing management have come to an uneasy truce following DSS' inroads into the once sacrosanct realm of corporate data. It was DSS, he said, that created the end-user environment and taught management to go outside DP for decision-making

information. "But DSS has failed organizationally — it has no organizational base to support it. The authority still rests with DP, so the meshing of the two is to the benefit of both. We have to get away from the separation of telecommunications, DSS and DP. The technology and skills are

changing so rapidly that we must have a mutual sharing of ideas and information between the three," Keen said.

In order to secure its position within the organization, Keen said, DSS must work closely with upper management. "Upper level management must provide direction in the drawing of blueprints and the building of data and communications highways. A good DSS person will work toward that top management commitment to get mandates and action that will end the fragmentary, bottom-up approach to office technology," Keen said.

## CW AT SOFTWARE TOOLS

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## FMS seminar set for April 3

SCHAUMBURG, Ill. — The Computer Automated Systems Association of the Society of Manufacturing Engineers (SME) will hold its Flexible Manufacturing Systems (FMS) '84 seminar April 3-5 at the Hyatt Regency Woodfield here.

The seminar will feature an introduction to FMS and their components. Also scheduled are seminars on FMS implementation, sensor strategies for FMS, material-handling devices, software and control systems, simulation for FMS, group technology aspects of FMS and integrating robotics into FMS.

Eight different user case histories will be presented on successfully implemented FMS. FMS builders and component suppliers will exhibit their wares with a group of tabletop exhibits.

Registration fees are \$425 for SME members and \$485 for others. SME is located at One SME Drive, Dearborn, Mich. 48121.

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- ☐ Information Center Software Selection — ATRE  
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- ☐ Queueing Systems and Computer Applications — KLEINROCK  
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Washington, D.C. May 14-16, 1984
- ☐ Strategic Planning for Office Automation — WOHL/MORGAN  
San Francisco May 14-16, 1984



## NEWS

# Concern mounts over misuse of medical records

By David Olmos  
CW Staff

CHICAGO — In the thick of last year's mayoral race here, damaging information about Republican candidate Bernard Epton's medical history was revealed, perhaps influencing the election results.

Some health care groups fear the potential for similar disclosures of supposedly confidential medical records — whether those of politicians or the general public — is becoming more likely. The growing use of computerized medical records in U.S. hospitals is posing an Orwellian threat to patients' privacy, according to one top health care official.

"Never before has the privacy of health records been so endangered," said Dr. Stuart A. Wesbury Jr., president of the American College of Hospital Administrators (Acha), in a recent report that warned of the "potentially serious threat" posed by increased computerization.

New demands for information by the federal government and insurance companies have prompted the college and other health care groups to call for stronger safeguards for computerized medical records. The 28,000-member college is the nation's largest organization for health care workers.

Last October, the government began new payment procedures in which hospitals are paid predetermined rates for the care given Medicare patients, Wesbury said. This has made it necessary for hospitals to correlate patient information and financial information "as never before."

The new payment structure has made it virtually impossible for a hospital to function efficiently without its own in-house computer system, service bureau or other outside time-sharing service, Wesbury noted.

The new Medicare payment procedures raise the likelihood that access to information will be available

not only to doctors and nurses, but also to data processing and accounting department personnel, he said. An average of 75 people in each hospital now have access to patient records, according to research by the college.

The government and insurance companies are not the only organizations seeking patient information, Wesbury continued. Many employers are now establishing their own health insurance plans and are seeking patient data before making payments. An employer conceivably could gain access to medical information that the employee wanted kept confidential, he said.

Health organizations are recommending that hospitals implement policies on data security to help protect patient privacy.

Confidentiality of patient records "is a problem, but it can be overcome," according to Peter Wagemann, director of the Institute for Medical Record Economics, Inc., a

Boston-based research organization serving the health care industry. The institute has recommended that every staff person with access to patient information be required to sign a statement of confidentiality, with violations punishable by reprimand or dismissal.

Wesbury said he was alerted to the security issue last August after a widely publicized incident in which computer hackers gained access to patient files at the Memorial Sloan Kettering Cancer Center in New York.

That kind of incident "perks up your ears," he said. "What if you have someone who really knows what they're doing and has more sophisticated hardware and software?"

The American Medical Records Association, in a statement on confidentiality and security of health records, urged hospitals using computers to adopt security safeguards such as limiting access to patient records, controlling access by pass-

words, establishing user input and output limitations, using numbers instead of names for both patients and health care providers and maintaining backup files on magnetic disk or tape.

One group is addressing the problem of access to medical information by creating model state legislation. A drafting committee of The National Conference of Commissioners on Uniform State Laws, a quasi-governmental body comprised mainly of lawyers appointed by the nation's governors, has completed a preliminary draft of a Health Care Information Act.

According to Alan Bennett, a Washington lawyer and reporter for the drafting committee, the legislation, which involves records on paper as well as in computers, contains provisions to protect access of certain medical records, prohibit disclosure of data without patient consent and place restrictions on access by law enforcement agencies.

## Input error blamed for Monsanto's hefty GOP gift

ST. LOUIS — Input error has been blamed for the Monsanto Co.'s \$12,439 contribution to the Missouri State Re-

publican Party, money that was supposed to go to a Monsanto vendor.

It took more than six weeks for the error to come to light, and it did so only when the vendor, Forest Products Co. of Chicago, demanded its money.

"Apparently one of our employees punched a zero on a computer when they should have punched a three," said Dana Spitzer, Monsanto's midwest regional director of state government and civic affairs.

That input error in August led to Monsanto sending checks of \$10,322.62 and

\$2,117.23 to the state offices of the GOP, whose account number with Monsanto is that one digit different from Forest Products' account number.

Party officials accepted and banked the \$12,439 contribution, even though it was far in excess of the "\$500 or so" that the company usually gives to the party, according

to Spitzer.

When Forest Products complained that it hadn't been paid, Monsanto discovered the error and notified Republican State Chairman Shannon Cave.

Spitzer reported that Monsanto expects to be reimbursed as soon as party officials meet to approve repayment.

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UNIVERSITY PARK, Pa. — Charles H. Naginey, director of management services at Pennsylvania State University, has been elected president of Cause, the Professional Association for Development, Use and Management of Information Systems in Higher Education.

Naginey has served on the Cause board of directors since 1982 and last year served as secretary/treasurer of the organization.

He holds B.S. and M.S. degrees in industrial engineering from Penn State and is a doctoral candidate in higher education at the university.

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## NEWS



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## AUSTRALIA

**ADELAIDE** — Competition in the large financial systems market is heating up following the entry of a new player, Walker Interactive Products, Inc., represented here by SPL Australia Ltd. SPL recently beat out strong competition from other established vendors — SI Products, McCormack & Dodge Corp., Aruthur Andersen & Co. — in winning a major contract here from oil mining company Santos Ltd.

## CHINA

**BEIJING** — Eastern Computers, Inc. (ECI) has unveiled a Chinese microcomputer that features 30,000 Chinese characters. The ECI 3916 system comes in two versions — one for the People's Republic of China and one for Taiwan. According to the vendor, it takes the user between three and eight days to become proficient at entering data into the system. The 16-bit system comes with 256K bytes of random-access memory, 1.2M bytes of floppy disk capacity, full word processing keyboard, two serial ports, one parallel port and a 25- by 40-line character display screen. It is priced from \$4,495.

## FRANCE

**PARIS** — Gixi, a French software and engineering house, has launched a 2048-by-2048-pixel graphics terminal called Radiance 2000A. Developed for computer-aided design and manufacturing applications, the terminal consists of a 20-in. screen, a keyboard and a digitizer. It is said to be compatible with Tektronix, Inc.'s 4014/4016 units and costs approximately \$17,000.

## JAPAN

**TOKYO** — Toshiba Corp. has released a 5¼-in. floppy disk drive called ND-08D that can handle up to 1.6M bytes — the largest memory capacity available with a 5¼-in. product, the vendor claimed. In addition, because of its large-scale integration design, the disk drive can reportedly transmit data at the rate of 500K bit/sec. The product is priced at \$221.

**TOKYO** — NEC Corp. has released an operating system for its MC Series of minicomputers that is compatible with Unix software. Called MS-UX, the product features window display screen edit-

ing functions via windows, numerical value calculation, input and editing of Japanese text and a remote job entry facility to NEC's Acos Series mainframe. MS-UX will be available in April for \$6,809.

## WEST GERMANY

**FRANKFURT** — Within a few short years, one out of every two personal computers will be used in a commer-

cial environment, according to a recent report published here by Diebold Deutschland GmbH. The analysis claimed that big business is making great use of the microcomputer, while there is not yet much personal computer activity in small and medium-size companies.

**BOEBLINGEN** — Hewlett-Packard GmbH announced that it is very optimistic about its growth rate. During

fiscal year 1982 (ending September 1983), the company showed a 20% increase in revenues. According to chairman of the board Eberhard Knoblauch, HP GmbH is in the running to claim the No. 2 spot in the personal computer market here.

**MUNICH** — The German Federal Postal Administration has commissioned a consortium of German telecommunications and aerospace

companies, headed by Siemens AG, to establish a German communications satellite system by 1987. The system has three main tasks to accomplish: high-speed transmission of telephone and teleconferencing calls and data; expansion of telephone and data channels to Berlin; and trial operation of a new frequency range for future television use, according to a consortium spokesman.

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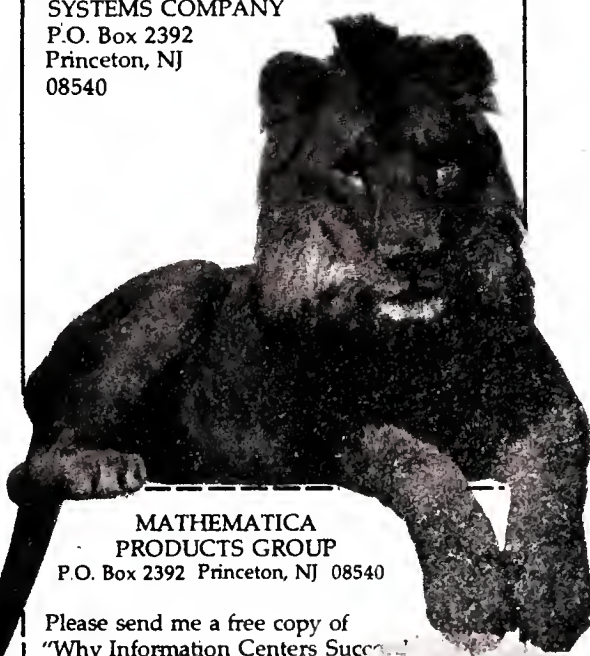
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# TANDEM

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## NEWS

# Model assesses how OA equipment improves productivity

By Lynn Haber  
CW Staff

COLUMBUS, Ohio — A computer model that assesses how office automation equipment can improve office productivity has been developed by a research and development facility here.

The model is an offshoot of a program that Battelle

Memorial Institute's Columbus Division has been working on since 1978 to measure industrial productivity at the plant level.

The office model enables researchers to measure total current productivity by clerical, management and technical personnel, then determine specific areas in which

improvements can be made.

The Battelle model can be used to measure productivity in industrial, service and government organizations. Such functions as budgeting, purchasing, data control, management and support can be analyzed.

"Once we establish a relative measurement," ex-

plained Dean F. Poeth, a researcher at the facility, "through the use of the model, we're able to play 'what-if' games."

"If you introduce such and such equipment, you might have such and such effect. However, there is capital investment, energy requirements and space allocations.

... Exercising the model, we come up with a prioritized list of what one might do to improve the productivity, given the measures that have been internally generated."

## Will send in team

To utilize the productivity model, a company must contract to have Battelle evaluate the areas it is interested in having studied. Battelle will send in a team that includes computer people, industrial engineers and other individuals with a multidisciplinary background to match the area being evaluated to become the facilitators of structuring the model.

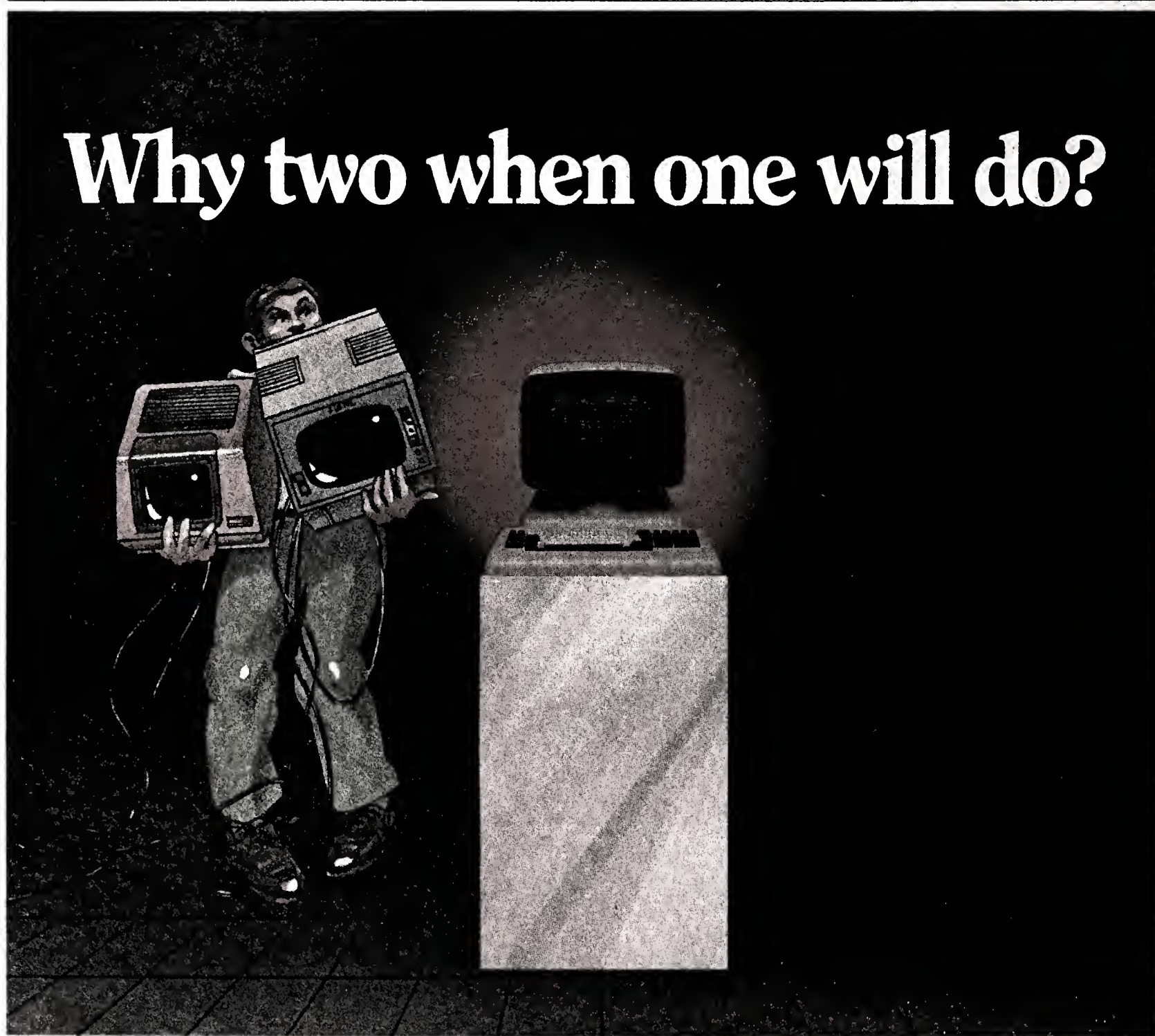
The researchers will modify the computer program for that specific model and implement it so the contracting company's employees can run it.

"It's not a canned program at all," Poeth said. "It's used as a planning tool designed for people to look at the potential for inputting office automation or any kind of productivity improvements," according to Poeth.

Poeth estimated that for a typical organization with a few hundred people, the modeling study could be done in three months.

The cost for a program evaluating several hundred people to 10,000 could range from \$30,000 to \$50,000.

Further information is available from Battelle Columbus Laboratories, 505 King Ave., Columbus, Ohio 43201.



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protocol conversion. This approach allows a Lee Data controller to provide dedicated 3270 and VT100 processors for concurrent, but independent application access.

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## Course on SAS announced

ARLINGTON HEIGHTS, Ill. — Advanced Systems, Inc. has announced a videotape training course titled "Using the Statistical Analysis System." The Statistical Analysis System (SAS), developed by SAS Institute, Inc. in Cary, N.C., is a data retrieval and management, programming, statistical and reporting system.

The course, which was designed for managers and programmers, teaches how to write SAS code, input and analyze data and produce reports.

The course is leased to companies for prices that range from \$50 to \$100 per year, depending on the length and type of lease, the vendor said.

Advanced Systems is located at 2340 S. Arlington Heights Road, Arlington Heights, Ill. 60005.



## NEWS

# Japan no big threat to U.S. vendors, Darpa chief says

By Jake Kirchner  
CW Washington Bureau

WASHINGTON, D.C. — A top Pentagon researcher last week said Japanese computer makers, contrary to fears widely expressed in this country, do not threaten to supplant American firms as the major suppliers to the U.S. market.

Dr. Robert S. Cooper, director of the Defense Advanced Research Projects Agency (Darpa), dismissed fears that the Department of Defense and other users of advanced computer systems might have to rely on Japanese companies for supercomputers by the end of the century.

Cooper told an Institute of Electrical and Electronics Engineers (IEEE) conference here Tuesday that he has just returned from a visit to Japan during which he inspected a number of university, government and industry high-technology laboratories and viewed operations of the new class of supercomputers recently installed by Hitachi Ltd. and Fujitsu Ltd.

Cooper was "very much impressed" with the new supercom-

puters and said they may prove better than existing U.S.-made computers by some performance criteria. But, he added, the real question is how the Japanese will compete with the next generation of U.S. supercomputers, those with 10G floating-point operation/sec now under development by ETA Systems, Inc. and Cray Research, Inc. for 1986-87 release.

Although he was concerned that the Japanese may have a two-year jump on those American efforts, Cooper also insisted he does not believe the Japanese will overtake and supplant the U.S. in this area. "I feel our industry is highly competitive," he said. "The Japanese have a serious problem on their hands trying to address any market in the U.S."

In any case, Cooper said, Darpa's "strategic computing" program, aimed at developing several classes of superfast machines using artificial intelligence to control advanced weapons systems in the 1990s, guarantees the U.S. will be able to supply future supercomputer needs.

Of the Defense Department program, he predicted that "much of the research will spin off rapidly" to boost the American computer industry. The program, with a proposed 1985 budget of \$95 million, will eventually cost \$150 million a year, according to Cooper.

He also called the program "an insurance policy" against IBM's decision not to reenter the supercomputer industry. He said IBM is "the key to the whole issue" of U.S. dominance over Japan in this industry. Unless IBM becomes more aggressive in advanced computers, it will continue to lose worldwide market share, he said, predicting its market share could drop to 20%.

Other speakers at the session on supercomputers also looked to IBM for the continued health of the U.S. computer industry. Dr. Kenneth G. Wilson, Cornell University physicist and 1982 Nobel laureate, called for a cooperative program involving IBM and other industry firms to develop a business market for supercomputers.

Wilson said he has been assured

by executives at ETA Systems, the Control Data Corp. supercomputer spin-off, that current technology permits development of a \$500,000 supercomputer if there is a market for it. He suggested that U.S. government support is also crucial to the U.S. supercomputer effort.

Wilson, who has been active in trying to get greater U.S. scientific community access to advanced computing facilities, chastised Congress for ignoring what he called critical economic and scientific needs and spending too much time on defense, the deficit, taxes and "struggling with all the other stupidities that go on in this town."

## Engineers group looks to start research centers

By Jake Kirchner  
CW Washington Bureau

WASHINGTON, D.C. — The National Academy of Engineering (NAE) has proposed establishment of 25 engineering research centers, joining industry and academia in various engineering projects, including design, manufacture and operation of computer and telecommunications systems.

In a report to the National Science Foundation (NSF), which has provided for initial support of the program in its proposed 1985 budget, the NAE said the centers would enhance the quality of American engineering edu-

cation by familiarizing students and faculty with "how engineering knowledge is converted by industry into societal goods and services."

The centers are needed, according to the report from a special NAE panel, because of a "particular weakness" in current engineering education: "an overemphasis on analytical research, with less opportunity for 'hands-on' experimental research; inadequate exposure of engineering students to engineering practice; and a lack of interaction between faculty and industrial practitioners of systems engineering."

The academy said the centers,

which would be established at engineering schools, would bring an interdisciplinary approach to industry/university research.

NAE noted an NSF report that claimed there is a growing need for engineering education that cuts across the engineering subdisciplines and applied sciences.

The academy estimated each center would cost between \$2.5 million and \$5 million per year, requiring a minimum NSF support level of \$100 million. However, the NAE report suggested the program could be developed in steps, with an initial establishment of five to 10 centers.

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## NEWS

# Survey reveals OA accepted with open arms

By John Gallant  
CW Staff

A recent survey of more than 500 secretaries and administrative assistants indicated that despite management fears, office automation has been accepted with open arms.

But the survey also revealed that for those who master the skills of the high-technology office, expectations of higher pay and career advancement often go unfulfilled.

Titled "People in the Electronic Office," the survey was conducted for Kelly Services, Inc. by the New York-based research firm Research & Forecasts, Inc. The nationwide poll

was designed to gauge the sentiments of 507 full-time corporate secretaries toward recently introduced office automation tools, primarily word processing equipment.

On a scale of emotional responses ranging from love to hate, 83% of the secretaries said they love WP equipment, while none expressed the opposite reaction. Eighty-seven percent said they feel WP skills will lead to new career opportunities, and even more (88%) said those skills will result in salary increases.

But the survey revealed a number of puzzling discrepancies, according to Kelly Services spokeswoman Rose

Lesch. Despite the optimism of most secretaries, only 30% had actually received pay increases as a result of acquiring WP skills. And when asked what opportunities open up through WP skills, very few of the respondents named positions which could be considered even middle management.

Furthermore, the respondents said old-fashioned personal initiative still ranks No. 1 in determining pay raises and promotions.

Three-quarters of the secretaries said OA equipment frees them from typing chores and allows more time for work that involves decision mak-

ing. But when asked what new responsibilities the electronic tools allow them to undertake, most named tasks that Lesch described as traditional secretarial duties, such as drafting letters and researching and writing reports.

"We were very excited about the finding that secretaries are pleased about word processing. There has been a lot of concern and confusion about how they would adapt to that," Lesch said. "But more important, the survey also brings out the disparity between their beliefs and reality."

Age, according to Lesch, was an important factor in the survey. Forty-eight percent of the respondents under age 25 reported pay increases resulting from WP skills, compared with much lower figures among older secretaries. The younger secretaries said their knowledge of WP is more important than such customary skills as shorthand, while their older counterparts place more value on such traditional abilities.

In addition, almost a third of the younger respondents already had training in either Cobol or Basic programming. Lesch said those results reflect the "mobile secretary of the future, one eager to learn about new technologies and to advance as a result of the newly acquired skills."

Copies of the survey are available free from Kelly Services, Public Relations Department, 999 W. Big Beaver Road, Troy, Mich. 48084.

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## OA no threat to job security

The fear that office automation will replace support personnel has so far not turned into reality, according to the results of a Kelly Services, Inc. survey of secretaries conducted last October and November and released in a report titled "People in the Electronic Office."

Eighty-two percent of the more than 500 secretaries polled said they have no worries that their jobs will be eliminated as a result of automation. In fact, 83% said the number of secretaries in their offices has grown or remained constant.

In a surprising finding, the survey revealed that for 63% of the secretaries queried, word processing actually alleviates the amount of work-related stress they encounter. Further, discomfort in working with WP equipment and difficulty in learning to use it ranked at the bottom of a list of stress-inducing factors.

Among the more stressful influences in the work place were frequent interruptions, meeting deadlines and boredom.

With the exception of eyestrain, according to Kelly Services spokeswoman Rose Lesch, physical problems such as headaches and backaches have not increased significantly with the installation of word processors.



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## NEWS

# Portable to help mountaineers scale Everest

By Paul Korzeniowski  
CW Staff

In 1924, British explorers George Leigh-Mallory and Andrew Irvine unsuccessfully attempted to become the first climbers to reach the summit of Mt. Everest in Tibet. On February 27 of this year, 16 mountaineers began a three-month quest to be the first team of Americans to retrace the British explorers' course. A portable computer will play an integral part in the journey.

"The computer will serve a number of purposes," said Robert Berg, an expedition member and president of Zepher Industries, Inc., a Seattle-

based distributor. "With it, we can easily alter our route. Variable factors such as temperature, snowfall, energy consumption and available equipment are used to determine the best route to the summit. Completing calculations with a computer will be much easier than using a pencil and paper."

The computer will also be used to monitor expedition members' health. After medical information, such as pulse rates, is input, recommendations will be made concerning whether climbers should journey into the cold or remain in the expedition's warm research tent.

Seven tons of equipment, eight yaks and 15 Tibetan porters are part of the expedition, dubbed Ultima Thule, a Greek and Latin phrase meaning "the ultimate outer limits of achievement."

"The computer will help us track inventory by calculating how much food and energy is available and how much is needed for each part of the trip," Berg said, who has climbed Mt. Rainier and Mt. St. Helens in Washington.

The mountaineers were scheduled to pitch camp at seven locations. While the computer will not reach the mountain's top, at 29,028 feet, it

will be used at a camp located at 21,000 feet, where temperatures will be quite chilly. "Throughout the trip, temperatures will range from 0 degrees [Fahrenheit] to 40 degrees below 0," Berg said. "The heat will be on at some times, but not all the time. We have to conserve as much energy as possible. One reason we decided to use a portable computer was that it doesn't use much electricity."

One climber, Tom Clement, must ensure that the computer functions in any weather. According to Berg, Clement teaches at the University of Washington and contacted a friend to write the programs that will be used on the trip.

The expedition costs approximately \$600,000, according to Berg, with a number of items donated: Microsoft, Inc., based in Bellevue, Wash., helped write the programs; Columbia Data Products, Inc. of Columbia, Md. donated its Multipersonal computer; and Okidata Corp. in Mount Laurel, N.J., presented the expedition with its Microline 92 printer.

Weather will be a critical factor in the expedition's quest to reach the summit. "If the monsoons kick up early, we will have to quit," Berg said. "We're hoping to get cooperation from the weather." If all goes well, the expedition will be completed on June 1.

## Adcis session slated for May in Columbus

BELLINGHAM, Wash. — Dr. Fred Hofstetter of the University of Delaware has been elected as the Dean Memorial Lecturer for the 25th International Conference of the Association for the Development of Computer-Based Instructional Systems (Adcis), an organization for applied research in the use of computers for support of direct instruction.

The Adcis presession and conference will be held May 14-18 at the Columbus, Ohio, Hyatt Regency Hotel. Running from May 14 into the morning of the 15th, the presession will be devoted to in-depth presentations and discussions of several topics.

Hofstetter, who is director of the University of Delaware's Office of Computer-Based Instruction, has served as principal investigator in several research projects dealing with instructional technology.

Conference fees for members are \$50 for the presession, \$85 for the conference and \$105 for the conference and presession. For nonmembers, the fees are \$60 for the presession, \$120 for the conference and \$140 for both. For students and spouses, the rates are \$30 for the presession, \$35 for the conference and \$35 for both, according to a conference spokesman.

More information on the conference is available from the Adcis International Headquarters, located at Miller Hall 409, Western Washington University, Bellingham, Wash. 98225.

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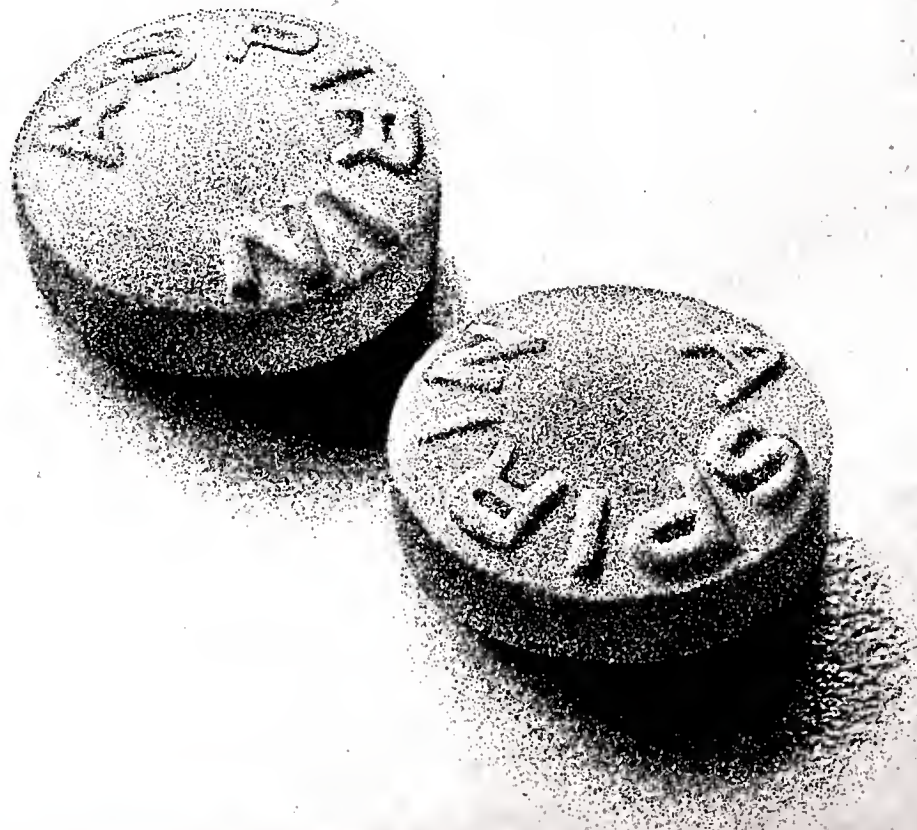
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## NEWS

# Micro tracks cancerous tumors at McGill

By Paul Korzeniowski  
CW Staff

MONTREAL — A computer was a key tool leading to the recent discovery that cancerous tumors in advanced stages of growth fend off a body's defense mechanisms.

Dr. Peter Noble, a specialist in cancer research at McGill University here, found that certain white blood cells, which in many cases are attracted to and destroy cancer cells, are actually repelled by a chemical secreted by advanced cancer cells.

To observe cell movement, Noble used a microcomputer system from Electro-Optical Information Systems, Inc. (Eios) in Santa Monica, Calif. The microcomputer employs frame grabbing, a technique that transforms individual pictures into pixels. Graphics data is then fed into a series of Fortran programs, developed by an electrical engineer at McGill, that determines in which direction cells are moving.

This method of determining movement was pioneered by McGill University engineers. "We developed the first applications, which used time-lapse photography and the Markov Theorem to determine movement," Noble said. The Markov Theorem provides a model in which the probability of an event is dependent only on the event that precedes it.

"A student in the mathematics department was helping us apply the Markov Theorem," Noble said. "He approached Dr. Martin Levine, an electrical engineer, and asked him to write a program which would speed calculations."

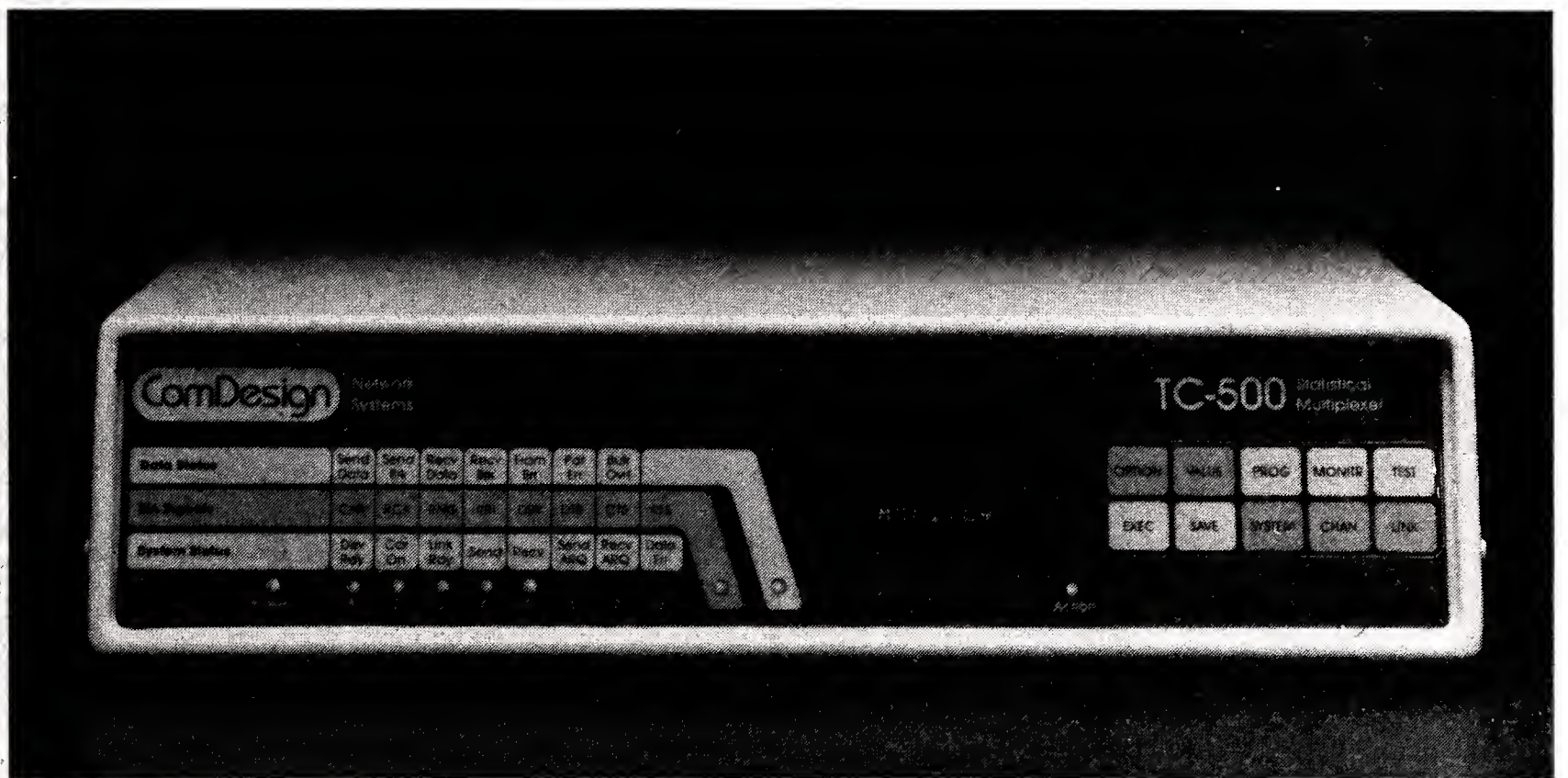
"Originally, we were using a Digital Equipment Corp. VAX/11 superminicomputer. Last year, we switched to the Eios system." The Eios system uses an Intel Corp. 8086 microprocessor, Digital Research, Inc.'s CP/M 86 operating system and Eios frame-grabbing software.

"The program is designed to transform pictures into graphics data," said an Eios spokesman. "Since we customized the program, it is used by a number of different companies. We customized Dr. Noble's system so that it could use Fortran subroutines."

Noble bought an Eios system for \$17,000 Canadian. "There were problems with the VAX system," Noble said. "We are located in a separate building, so communication was a problem. The VAX was expensive to own and operate and required extensive programming knowl-

edge." In addition, he noted that a large number of users would tax the system's capacity to the point that the DP department's turnaround time for some programs was sometimes as long as one week. The Eios system allows for more rapid turnaround, he said.

A number of other researchers are using the system. "Since the system is easy to use, any biology student can use it," Noble said. "Before, it was used only by electrical engineers. I think it will be used for a number of research projects and also as a health care tool."



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### EASY TO USE

The TC-500A is also surprisingly user-friendly. For starters, you never have to flip DIP switches or figure out complicated codes. As a matter of fact, the TC-500A is menu driven, in plain English. All commands are simply entered via the convenient front panel or through the supervisory CRT.

### A NETWORK CONTROL CENTER TOO

The TC-500A's multiple micro-processor based architecture makes it powerful enough for network control and management functions. From either end of the network, you can monitor and test the entire system or its individual components, perform complete reconfiguration or change any operating parameter.

And, should anything ever go wrong, the TC-500A's extensive self-diagnostic capabilities make it easy to pinpoint the problem and effect immediate corrective action.

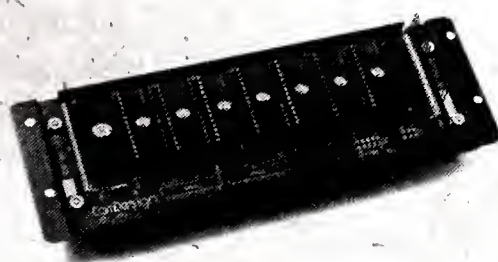
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\*32 asynchronous or 28 synchronous and 4 asynchronous.



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## NEWS

# Data base service available for job matching

By David Olmos  
CW Staff

WEST PALM BEACH, Fla. — A data base service called Careersystem was started recently by Careersystem, Inc., a wholly owned subsidiary of General Database Technology, Inc. based here.

The service allows employers to match job requirements against the data base to find qualified job candidates, usually after no more than a 10- to 15-minute search, according to spokesman James Blakenship. Careersystem also enables individuals whose resumes are in the data base to be continually matched with jobs for which they may qualify.

The service is targeting jobs for professional, technical and middle-management personnel because "that's where the demand is," Blakenship said. Among the first companies to utilize the service are American Express Co., AT&T, Harcourt Brace Jovanovich, Inc. and Pratt & Whitney Aircraft.

The data base is accessed through Falco Data Products, Inc. TS1 CRT terminals provided by Careersystem to employers and employment services such as personnel agencies. The data base resides on a Tandem Computers, Inc. Nonstop II system, which has the capacity to store 937,000 career profiles per node and is expandable to 256 nodes.

## Deltak series designed for non-DPer

NAPERVILLE, Ill. — A 15-course multimedia training series to provide non-DP personnel with a basic understanding of computer-based systems and their applications is available from Deltak, Inc.

Titled "Computers at Work: Concepts and Applications," the series explains the history of computers and their applications. Videotapes in the series feature interviews with data processing professionals and end users.

The individual programs in the series, produced by Mitchell Publishing, Inc., can be rented or purchased. Rental fees range from \$50 to \$125 per course, depending on volume. Courses can be purchased for \$1,750 each.

More information is available from Deltak, Inc., East/West Technological Center, 1751 W. Diehl Road, Naperville, Ill. 60566.

The key to the service, Blakenship said, is the software, which permits users with the Falco terminals to search, match and communicate needed information. The program, called the General Database System, was developed by company Chairman Dale Learn, President Wil-

liam Berry and Senior Vice-President Philip Morgan, who also are the firm's co-founders.

The data base is composed of career profiles that include information such as an individual's career objective, work experience, education background and current and

preferred salary level.

There is no fee for individuals who want their career profiles listed in the data base.

A company or employment service must pay a \$150 monthly fee for the terminal connection to the data base. There also is a \$2/min. con-

nect-time charge.

For each qualified candidate the employment recruiter locates, employers must pay a \$20 charge for receiving an information packet about that person.

Careersystem is located at 1675 Palm Beach Lake Blvd., West Palm Beach, Fla. 33401.

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## NEWS

# Health firm improves care with automation

By Lynn Haber  
CW Staff

AUSTIN, Texas — A hospital development and management company here relies heavily upon automation to help make decisions at its headquarters and to improve patient care at its 12 facilities nationwide.

Automation at Healthcare International began in the fall of 1980, when its first computer, an IBM System/34, was installed at one of the company's hospitals in Memphis.

In the fall of 1981, two more IBM systems were installed, one in the corporate

office and one in a Houston-based hospital. Soon after that, seven more systems were installed, and two more were scheduled to be installed in January 1984.

"We've had a pretty big growth rate," Don Landrum, Healthcare's director of information systems, noted.

"Presently, we're evaluating an IBM System/36 for our larger hospitals. We're constantly upgrading."

The company also uses IBM 5520 word processing systems at the corporate office and IBM Displaywriters at all of the hospital facilities. In all, the company has

about 65 workstations.

"On our IBM System/34, we're running all the basic applications — accounts payable, ledger, payroll and fixed assets. We also have a financial reporting system that we've written in-house and a consolidation reporting system," Landrum said. "But our most unique application is our referral system."

## Admittance inquiries

When someone inquires about admittance to one of Healthcare's hospitals, an employee records information about the patient on a terminal.

"We use our referral system for tracking where the patient is calling from, what part of the country he's interested in and what his problem is," Landrum said.

"We also note whether we admitted the patient to one of the company's hospitals or why we didn't — for example, was it because we don't treat that particular type of disorder?"

"We hope that in two to three years we'll have enough of a data base built on that type of information that we can use it to decide where better markets are to be found or for research and development types of applications."

## Referral system

The referral system has only been in operation for a year. "We're in the beginning stages of building our patient data base, so it will be a couple of years before we can use it as a tool the way we would like to," Landrum said.

The company would also like to use the stored information to decide whether new programs or medical equipment should be added to match the needs of potential patients.

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## NEWS

# Three suspended for tapping school's system

By Patricia Keefe  
CW Staff

SAN DIEGO — A series of break-ins into the computer system at a specialized math and science high school here last month has resulted in the suspension of three students and a beefing up of system security.

Officials of the San Diego School Department and Gompers Secondary School decided against filing criminal charges with local police, even though four students allegedly deleted grades and altered other students' homework filed on the school's Digital Equipment Corp.

minicomputer system.

Initially, the students confined their activities to changing passwords so teachers couldn't access their programs. No data was lost, however, because the teachers had maintained hard-copy backup, according to Albert Cook, the assistant

superintendent of schools here.

Although Gompers officials are reportedly now planning to educate students and their parents about the ethics and legalities of system violations, Cook said new students are regularly given an orientation regard-

ing the ethics of computer science, including tampering.

Three of the students involved attended Gompers, while a fourth attended Patrick Henry High School, which also has a computer science program. Three of these students have been suspended from the computer science program for the remainder of the year, Cook said.

Their activities were discovered after the chairman of the Gompers computer science program realized that phone lines used by students to do computer science homework at night were being used during the day. After setting up a monitoring system, the chairman learned that a student at another school, using information supplied by his brother at Gompers, figured out the passwords needed for full access to the Gompers computer system. The two brothers then circulated the passwords among other students.

School officials still aren't sure how many students ended up with the ability to access the system. Although the students claimed the passwords were relatively simple, the teachers say the students were extremely lucky to have guessed them, Cook said. The only security precautions the school can take, according to John Crane, director of DP for the San Diego schools, is to change the passwords, which has been done. There is no need for anything more since the Gompers system is not connected to any school administration computers, he added.

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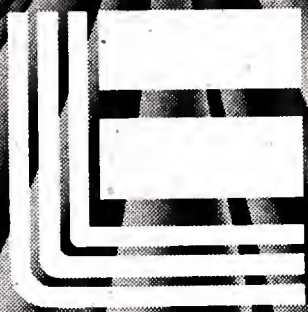
## EFT expo set for April 1-4

ORLANDO, Fla. — Robert B. Gill, vice-chairman of the board of J.C. Penney Co., will keynote the opening general session of the Electronic Funds Transfer (EFT) Association's annual convention and exposition. The EFT expo will be held April 1-4 here at the Hyatt Regency Grand Cypress Hotel.

The conference program this year will include sessions devoted to point-of-sale systems, automated teller networks, home financial services, automated clearing-house services, EFT operations, technology issues and marketing opportunities.

The registration fee is \$495 for members and \$625 for nonmembers. Information is available from 1029 Vermont Ave. N.W., Washington, D.C. 20005.





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## NEWS

# System to aid five cities pinpoint likely arson targets

By David Olmos  
CW Staff

QUINCY, Mass. — Fire departments in five U.S. cities will soon be enlisting the aid of computers to help pinpoint buildings that are likely targets of arsonists.

The Neighborhood Arson Information Management System will be operating in arson-prone areas in Dayton, Ohio; Kansas City, Mo.;

Louisville, Ky.; Oakland, Calif.; and Providence, R.I. The Ford Foundation has awarded \$501,000 in grants to organizations in those cities to carry out the program.

The National Fire Protection Association (NFPA), a Quincy, Mass.-based nonprofit organization, is spearheading the two-year program.

The Neighborhood Arson Information Management System is built

around a software program designed by Marmen Computing, Inc., a Menominee, Mich., software company. Using criteria developed by the NFPA, Marmen developed an application for Ashton-Tate's Dbase II data base management program.

Several insurance groups contributed a total of about \$45,000 to supply each of the participating cities with a Compaq Computer Corp. mi-

crocomputer and an Okidata Corp. Microline 92 printer.

Arson prevention programs in Boston, New York and New Haven, Conn., have used common indicators to develop detailed computer profiles of likely arson targets. Some of those indicators are tax arrearage, insurance policy information and a history of building code violations and fires of suspicious origin.

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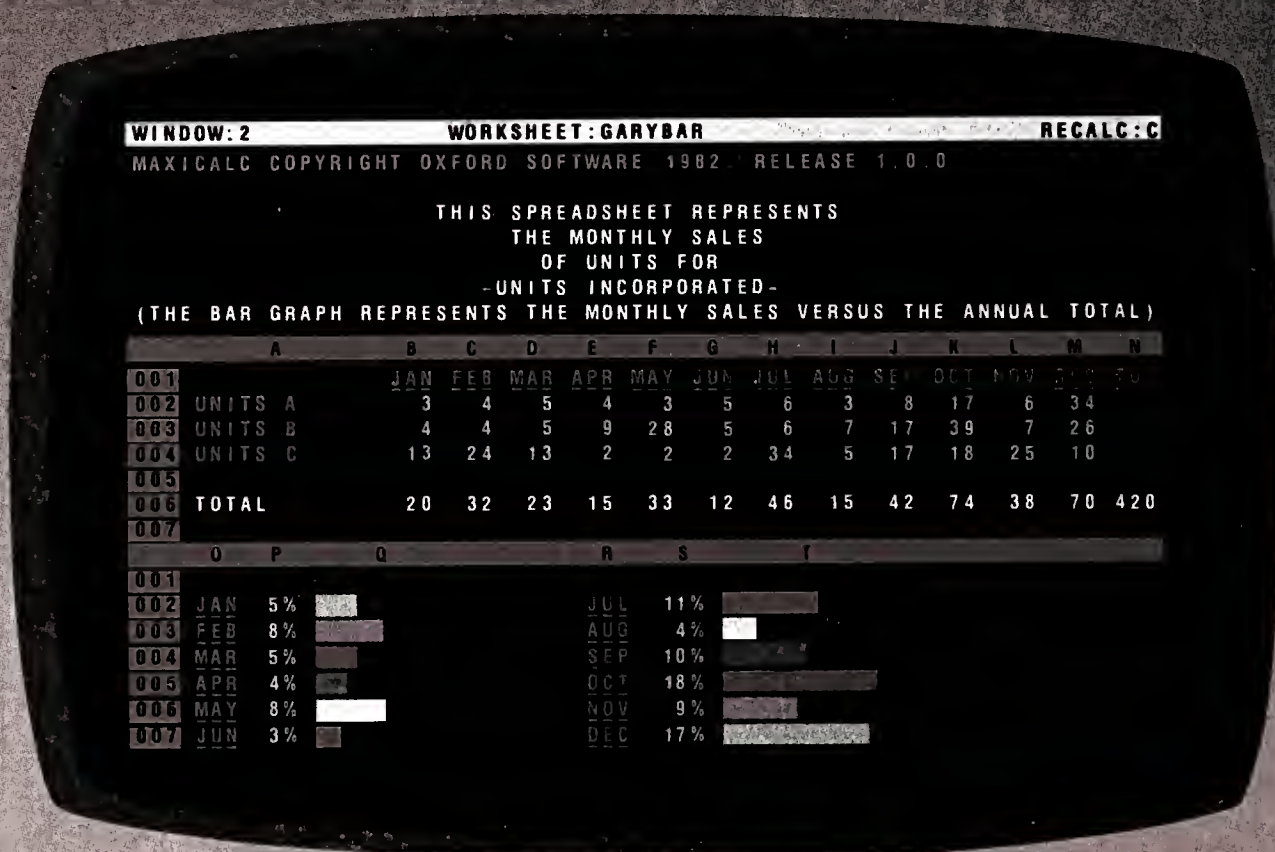
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## NEWS

# 'Journal' to retire typewriters, move on-line

By Edward Warner  
CW Staff

NEW YORK — The clattering of typewriters has almost completely died away in the newsroom of *The Wall Street Journal*, one of the nation's most traditional newspapers and one of the last to convert to electronic text management.

In a year or two, the last of the typewriters will be retired, as Dow Jones Co., owner of the *Journal* and *Barron's* magazine, completes the switch to a fully electronic newsroom. That transition took another step forward last month with the announcement by Dow Jones that it would purchase \$8.8 million worth of electronic pagination equipment from Information International, Inc. of Culver City, Calif.

The pagination equipment won't send any of the *Journal's* IBM Selectrics or Olympia USA, Inc. manuals to the closet, but it will eliminate the painstaking chore of page composition, in which the long columns of copy for which the *Journal* is known and all photographs and advertisements are pasted onto paper sheets that later become the printing plates for the *Journal's* pages.

The *Journal's* transition to word processing got a boost last year with the introduction of 75 Radio Shack TRS-80 Model 100 transportable microcomputers for the 100 reporters in the New York bureau, largest of the paper's 26 bureaus worldwide. Some typewriters still remain there, but in the words of one editor, Jim Hyatt, "Most everybody has begun using the [Radio Shack] machines."

To date, though, only about 250 of the machines have been supplied to the *Journal's* 450 reporters, editors and copyreaders worldwide; most of the others use typewriters. Dow Jones, according to the director of its operating services group, Kim Breece, recognizes the limitations of the machines — their LCD screen is relatively small, for example — and is seeking another system for its far-flung news staff, a system expected to cost as much as \$8 million to \$10 million. A vendor for that system will be chosen in the next six months, Breece said, and delivery of the desktop terminals and associated equipment should take place within one to two years.

Breece said Dow Jones was forced to "sort of drag our feet" on the move to full electronic text management and decided to go that route only two

or three years ago. A slow pace was needed, he explained, because of the difficulty finding equipment that could meet the paper's specialized production needs. The *Journal* has printing facilities in five different U.S. locations and computer centers for text production both in Dallas and in Chicopee, Mass. All are linked via satellite.

Using the newly ordered pagination equipment, which won't be on-line until sometime early next year, editors will be able to design news pages on the screens of desktop terminals. Finished page designs, complete with headlines, photos and ad-

vertisements, will then go to the *Journal's* existing laser scanner, which will broadcast them to the paper's production facilities, according to Kevin Howard, manager of media and public relations for Information International.

"What's coming in hasn't been done before," Howard boasted. "Our system, once it's up and running, will be the most complex in the newspaper industry." Currently only one newspaper in the U.S. produces printing plates for its press run directly from the page designs drawn by editors on their VDTs, Howard said, and that system is still only in

the testing stages. The Information International system will go that technology one better, he added, by linking with the *Journal's* satellite transmission equipment.

Meanwhile, in New York, the *Journal's* assistant wire room supervisor said acceptance of the new technology has been very high among the paper's news staff, though, "There are a few die-hard old timers who don't like to go to the new system."

As for Hyatt, he's keeping all of his bases covered: He has a Delta Data Systems Corp. editing terminal, a Radio Shack Model 100 and a manual typewriter, all on his desk.

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## Sobol to keynote Compacs March 20

LONDON — Michael I. Sobol, president of the MIS Training Institute, Inc., will be the keynote speaker at the eighth annual European Forum on Computer Audit, Control & Security (Compacs), which will be held here March 20-23.

Sobol, a computer audit consultant, will speak on the role of computer auditors.

Conference registration information is available from Compacs '84, IIA-UK, 82z Portland Place, London, England W1N 3DH.



## NEWS

# Speaker urges retraining in switch to OA

By Robert Batt  
CW West Coast Bureau

LOS ANGELES — Data processing analysts are in the best position to deal with the office automation needs of their organizations, but radical retraining is required if they are to become effective.

This was the message delivered to OA specialists at the recent 1984 Office Automation Conference (OAC '84), sponsored by The American Federation of Information Processing Societies, Inc. (Afips).

Speaking at a conference session titled "Turning a

Data Processing Analyst Into an Office Automation Analyst," Nigel Harrison, director of System Concepts Ltd., a London-based concern, said that while people with the right skills and experience to develop successful office systems are rare, most organizations have analysts and de-

signers on their staffs with many of the right attributes.

"The aptitude of the DP professional for analytical thinking and problem solving needs to be refocused for office systems, but his basic skills in this area give him a head start on many of his colleagues," Harrison asserted.

In retraining DP specialists for office systems work, Harrison said it is important for DP specialists to look at office systems from a user's point of view and not bring a preconceived technical solution to problems.

"The DP analyst needs to develop office automation analysis skills. He will need to take into account all the different views in the office, or any proposed system will fail," Harrison warned.

In terms of objectives, he added, data processing traditionally tends to be concerned with improving the basic efficiency of an organization — seeking better ways to do existing jobs.

By contrast, office systems will be concerned much more with improving the effectiveness of the organization by seeking ways to do new jobs.

"Office systems will affect many people and will therefore make human and behavioral issues a central and critical aspect of their introduction," Harrison said.

#### OA analyst's function

The function of an OA analyst is to understand a business system rather than a technical system. It is therefore imperative that DPs working with office systems understand the business activity of the organization.

A detailed set of analysis skills are needed to perform office systems work effectively, he contended.

"The skills needed to implement office systems successfully will be different from those needed to implement DP systems.

"Office systems will involve broader and often new development skills, with an emphasis on the analysis and implementation aspects. In addition, organizations will need to bring together many of the technology skills they already possess, but which are presently dispersed throughout the organization," he maintained.

Also speaking at the session, Pat Macauley, manager at Trigon Systems Group, Toronto, focused on the prerequisites needed to design an appropriate office system:

- A pilot project must be set up so that it leads to a permanent system.

- Users must contribute significantly to the project by gathering and analyzing data and by being actively involved in implementation.

- There must be visible management support for new office systems, and managers themselves should be seen using the system.

- Response time, accessibility and reliability are critical to the success of an office system.

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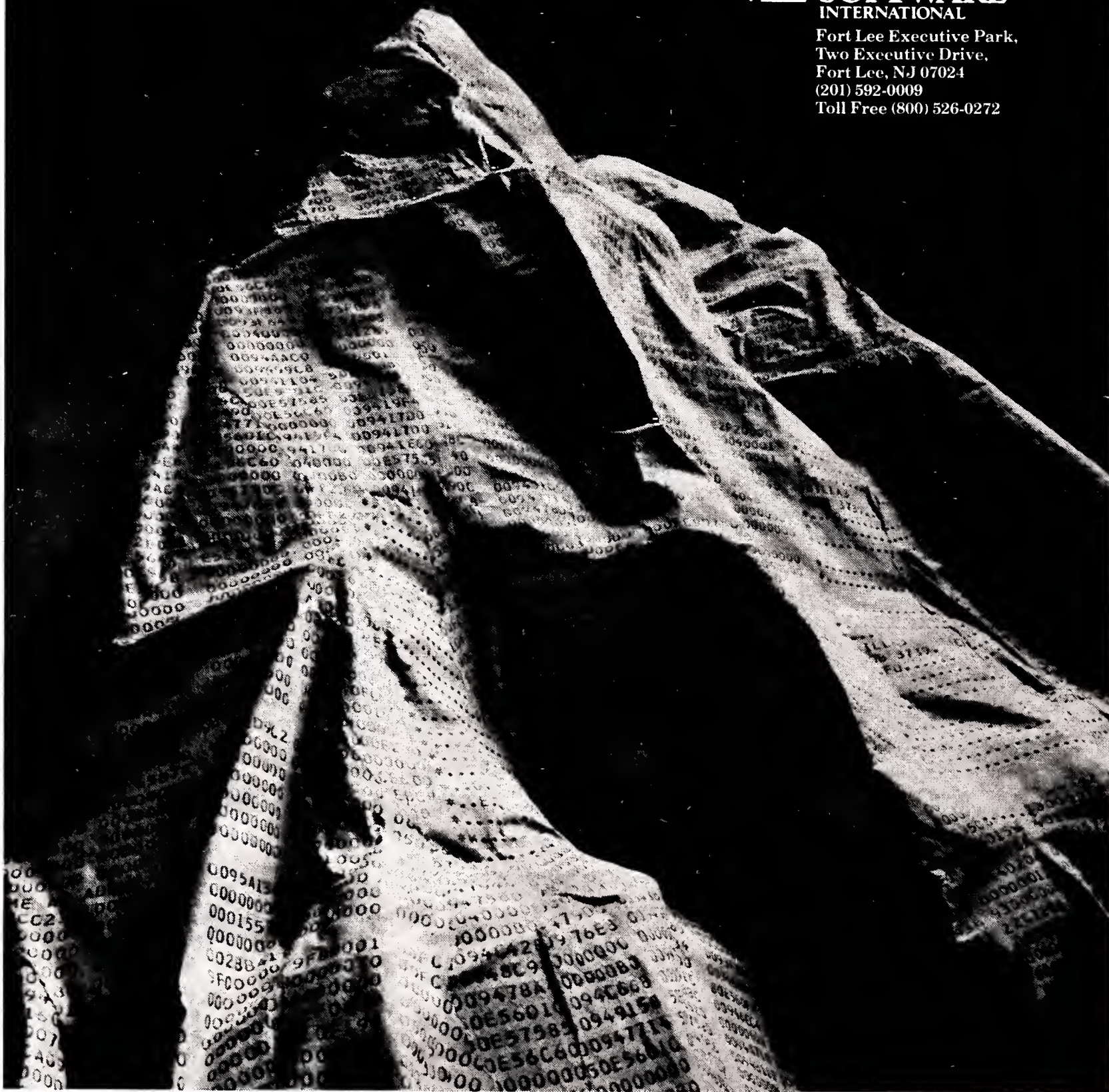
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## NEWS

# On-line data system tracks railroad's cargo

PHILADELPHIA — The Consolidated Rail Corp. (Conrail) runs about 2,500 freight trains each day and must manage about 225,000 individual freight cars. Keeping daily track of its rolling stock and individual cargoes led to the evolution of an extensive computerized management system.

A 1976 act of the U.S. Congress formed Conrail with the merger of six bankrupt rail carriers. One of the five largest U.S. railroads, Conrail operates about 15,000 route miles in 15 states, the District of Columbia and two Canadian provinces.

In 1982, Conrail began implementing an extensive on-line data system network known as the Resource Management System (RMS). The system includes more than 60 IBM 8100 computers distributed throughout Conrail's routing structure. Using about 2,500 IBM terminals, employees perform two primary functions — processing customer shipping orders (waybills) and monitoring freight as it moves from destination to destination.

The first 8100 was installed in Allentown, Pa. "It took us about four to five months to get out of there and get to the second one," said John Green, Conrail's director of Transportation Systems.

With installations of 8100s and satellites at a total of 300 locations, "we started in earnest in the summer of 1982 and put the last unit in during November of 1983," he said. Additional resources for training would have speeded up that process somewhat, he said.

## Repetitive code

One key benefit of the 8100 system is the development of the Repetitive Waybill Code (RWC). The RWC is a code assigned to a specific pattern which occurs when the same customer ships the same commodity to the same location a number of times. Conrail employees enter the 10-digit RWC, the car initials, the car number, the waybill number and the date. All other information (the origin, the destination, the commodity, etc.) can be automatically generated from the RWC.

When an employee makes an inquiry for an RWC, the file of the local 8100 is searched. If the code is not found, the request is relayed to the central data processing host in Philadelphia, an IBM 3081 operating under CICS. The network is managed using IBM's Tcam.

"Once you get a central system established, it's more of an evolution than a revolution," Green said. Conrail's central data processing was started with an IBM 370/155 in the mid-1970s; the next step in the evolution was an IBM 3033, which gave way to the 3081 last spring.

Approximately 90% of the RWC retrieval is done at the local level with the 8100. This provides two benefits — rapid response time and stand-alone capability. If the communication link to the central system is broken or the central system is down, the local sites still can perform their waybill functions.

The principal equipment for these functions are 56 IBM 8100s operating under IBM's DPPX software. The 8100s are each configured as a cen-

tral machine and serve approximately 180 satellite (communication links) locations. Thus, the mainframe can be located in one location, but a satellite can be located 50 or 100 miles away in another railyard.

"It used to take three minutes to generate a waybill," Green said. "Now a waybill can be generated in under a minute."

The end product: a hard-copy waybill, an IBM card which represents the car as it moves across the railroad and shipment data which is concurrently transmitted to the central files as it's entered.

Another part of Conrail's Resource

Management System is the car management center. In all, there are six car management centers, each one equipped with an 8100 operating under IBM's DPPX software. The centers perform an order matching function, taking the requirements of the customer for a loaded car and matching it with the available freight cars.

The management centers receive approximately 5,000 requests a day. The car management function takes the data which has been generated by the other 8100s and sends it to the host processor.

The goal is for the car-ordering center not to wait to assign the car to

an order before it has arrived at its destination. It is an effort on Conrail's part to cut down on the distance a freight car travels empty.

During the course of a day, Conrail's central data system processes about 180,000 transactions, Green said. Every time a message is entered on one of the local 8100s, the central file is updated. Having the central files updated on a regular basis provides Conrail and its customers with quicker, more reliable service.

"The customer is satisfied and we're saving money," Green said. "In my eyes, that's a tough combination to beat."

## New from Interactive Systems/3M:

### The first high-speed broadband local-area network that guards against data crashes.

If you've been thinking of investing in a contention network, consider this: How do you guard against data crashes during times of heavy system use?

Answer: You don't, because contention schemes simply don't provide any kind of data insurance.

Fortunately, there is a new type of network that does protect against data loss. It's called 3M Videodata® LAN/1. And it's the first intelligent broadband local-area network that's designed to get data through on time, no matter how much traffic is on the cable.

**Videodata® LAN/1: The efficiency of token-passing plus the proven flexibility and expandability of broadband.**

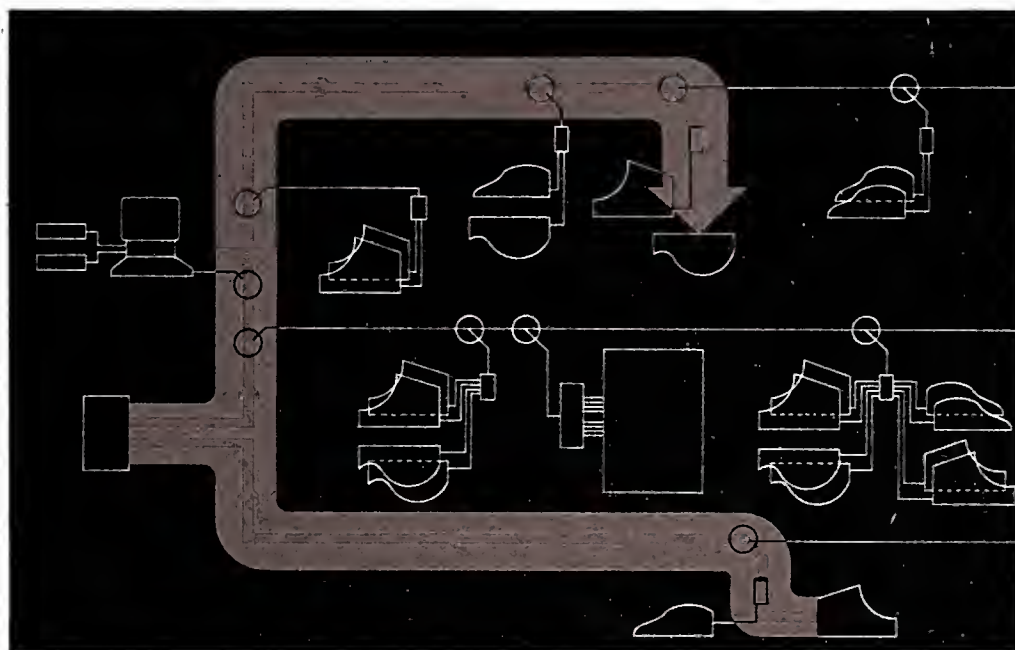
Token-passing networks eliminate contention troubles and data crashes by passing an electronic "token" from terminal to terminal. When a terminal has to transmit, it grabs the token and sends data packets to the receiving device. Receipt is acknowledged and the token is automatically released to continue its rounds. Because the system assigns a network entry address to each user, everyone has an opportunity to send data during each token cycle.



Because Videodata LAN/1 is a broadband system, dedicated channels can be used for full-motion video applications such as CAD/CAM and teleconferencing. These video signals are kept entirely separate from digital traffic on the network's token-passing channels.

So far, so good. But most token-passing networks are baseband systems, meaning that terminals must share a common channel as they would in a typical contention network. This can limit speed and capacity in some applications.

LAN/1 overcomes this possible limitation by combining token-passing with a proven broadband



In the Videodata LAN/1 network, messages can be sent from any terminal to any other without going through the host processor. Network Interface Units (NIUs) connect digital devices to mechanical taps (shown as small circles) on the main coaxial cable. A Network Monitoring Unit, or NMU, keeps a statistical record of network performance.

technology that allows many channels to be put on a single cable. The payoff: higher channel speeds, ranging up to 2.5 MB/s over a maximum seven-mile radius, with terminal data rates of up to 19.2 KB/s. Plus a capacity of up to 10,000 devices to allow plenty of room for future expansion.

**Self-monitoring, with a printed record of network performance.** LAN/1 gives statistical proof of its own performance in printed form, thanks to a microcomputer-based Network Monitoring Unit (NMU). This unit, which also helps in routine maintenance and troubleshooting, may be used for remote monitoring as well.

**Separate channels for voice, video, and graphics. Plus the ability to work in point-to-point applications.**

Because LAN/1 is a broadband network, channels can be set aside for real-time voice, video, and high-speed graphics. This can be done without compromising digital traffic capacity.

LAN/1's broadband design also permits flexibility in network architecture, so that it can be used in high-speed point-to-point applica-

tions which can't be served efficiently with contention systems.

Other benefits include full transparency, an automatic shut-off feature to keep any one terminal from capturing the token, and compatibility with both dumb and intelligent terminals. The list of features goes on and on.

For the full story on the new Videodata LAN/1 network from Interactive Systems/3M, call 800-328-1684 toll free. (In Minnesota, 800-792-1072.) Or mail the coupon.

Mail to: Interactive Systems/3M CW-3-5  
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## NEWS



## TURNAROUND TIME

Larry Long

**Q** The two people in our newly established information center and 20 programmers report to me. I'm comfortable with managing programmers, but have not fared well with the two people in the information center.

Our information center has five micros and eventually will have several terminals. Having no experience in this area, I didn't know whom to hire, so I recruited one person from corporate training and the other from my programming staff.

I thought that would be the perfect combination, but I've had nothing but complaints. The programmer tries to impress people, and the trainer simply can't answer questions about the hardware or software.

What type of background is best for persons working in information centers?

**A** It seems as if there are a dozen concepts for information centers. I see an information center as a place that has the tools to help users help themselves. These tools include hardware, software, technical support and education.

To date, no credentials package has emerged for information center personnel. In your environment, you must have people with a solid technical base who can use and explain the use of available tools. They can come from either MIS or the user community.

After technical competence, you can look for certain desirable personality traits. The person working directly with users must genuinely want them to learn so that they can eventually work independently. He must have patience and recognize that the users are not going to learn in one hour something that took him years to learn.

A common failing in information centers is that support personnel would rather just do the work than show users how to do it themselves. In the long run, this is counterproductive.

**Q** I've worked in technical systems for the past five years and have spent much of the past year learning about and installing local-area networks. My boss has asked me to prepare and present a one-day, in-house seminar on local networks.

My longest presentation to date was 10 minutes, and, frankly, I don't know where to start. Do you have any suggestion on effective presentation?

**A** Let me highlight a few key considerations. Prepare a de-

tailed outline of the entire seminar for yourself, then condense it to a one- or two-page handout. The act of preparing an outline causes you to crystalize your subject material into a logical sequence, and it gives the attendees a "road map" to follow.

Prepare examples that illustrate key points. You can't have too many examples.

People not accustomed to speaking tend to underestimate the time required to present material. If you think that it will take 30 minutes, plan on an hour and you will be about right.

You will know local nets better than anyone attending, so exhibit confidence from the start. There is always at least one person who will attack at the first sign of instability. This person is more concerned about

making you look bad than learning about local nets. Confidence is your best retort to this person.

Allow time for interaction, but never permit the discussion to drift away from the central focus of the seminar. As the seminar leader, you are responsible for directing the discussion. If you don't intervene, you may find the group talking about basketball rather than local nets.

Above all, have fun. If you appear to enjoy giving the presentation, then others will enjoy attending.

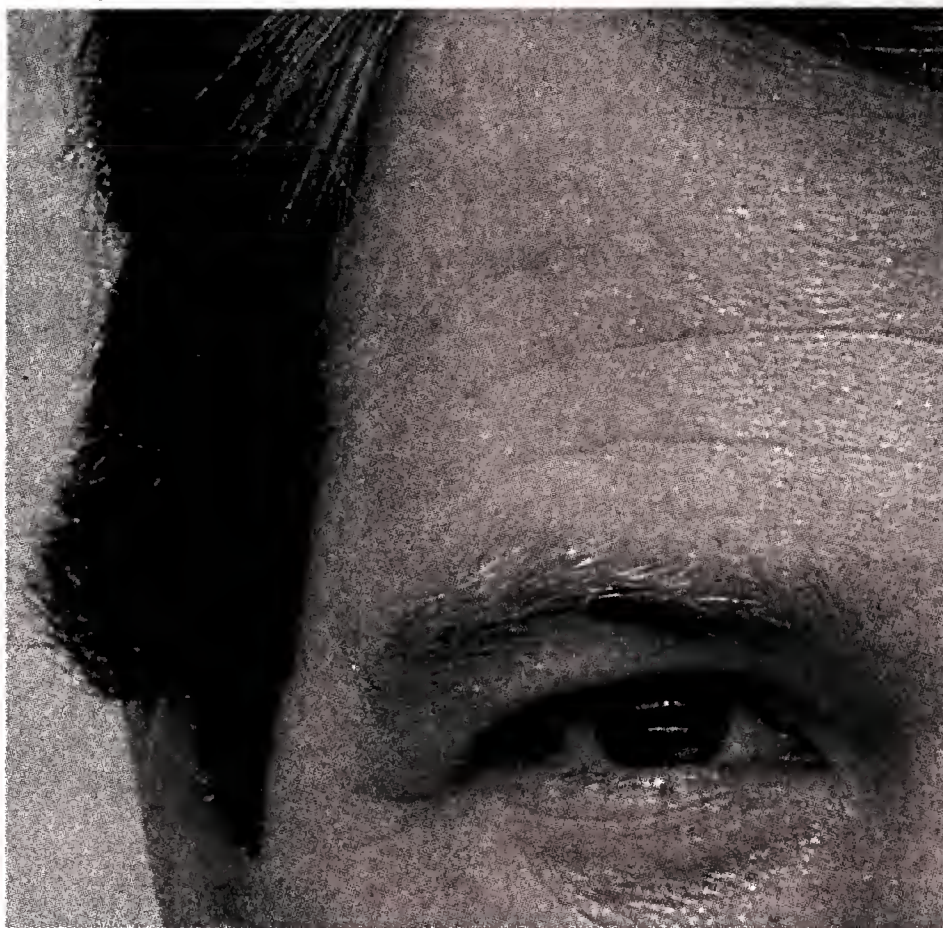
**Q** I'll graduate from college in June and eventually hope to work in the DP field. I'm considering graduate school, but my adviser suggested that I get a job and devote my energies to working for a few years, then return to graduate school full

time. I would appreciate your input.

**A** Students often ask me whether they should stay for a master's degree or go to work. My response differs from one person to the next based on the individual's level of maturity, continued enthusiasm for academic work, the institution he wants to attend and other factors.

If your adviser knows you and your circumstances well, you have probably been given some sound advice.

*Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.*



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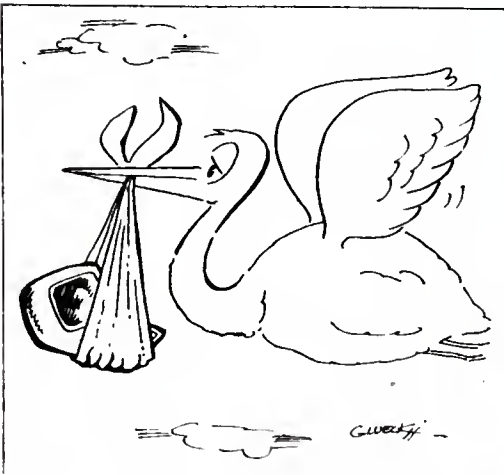
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## NEWS

# Realtor hones analyses with financial modeler

By Paul Korzeniowski  
CW Staff

NEW YORK — Pan American Properties, a real estate, farming, and forestry company here, realized that using Hewlett-Packard Co. calculators for financial modeling was not the best method of determining the feasibility of multi-million-dollar purchases.

"When we evaluated the purchase of a corporate office, we used calculators to help arrive at profit-and-loss estimates," said Bernard Ross, data processing manager. "We could calculate information for 200 different leases, but we were unable to in-

tegrate that data so it would be meaningful."

To alleviate the situation, Pan American began evaluating financial modeling products that would run on the company's IBM System/34 mini-computer.

"The package had to complete conditional programming, set limited parameters and handle GOTO subroutines," Ross said. "Most modeling packages were not sophisticated enough to meet our needs."

Pan American needed sophisticated programming, but it lacked an experienced programmer. "We were leery of developing the initial pro-

gram," Ross said. "It was complicated, and we didn't have anyone with programming experience."

Business Model Systems, Inc. in Oak Brook, Ill., agreed to design the initial package with one condition: If the program did not meet Pan American's standards, the company could return Business Modeler, a \$12,000 interactive financial modeling package.

"They developed a complicated real estate property program, which included conditional loops and other utilities," Ross said. Pan American's acquisition department now uses the system to integrate information from

all leases, identify market rates and calculate probabilities of tenants moving.

"If our purchasing analysis accuracy increases by 1%, the system would pay for itself," Ross said.

As Ross gained programming experience, he transformed the initial program into a complete system. "We expanded the program so that it acts as a miniature data base," Ross said. "We used an RPG program to connect the data files from the accounting and acquisition departments. The system produces special reports that each department uses. We have a more complete picture of our operation."

"Our California office has an IBM Personal Computer XT," Ross said. "With an [IBM 5251] Model 12 terminal emulator, it can use the modeling analysis capabilities."

## TI users meet set for March

AUSTIN, Texas — A meeting of Texas Instruments, Inc. computer users, the TI-MIX 1984 International Symposium and Exhibition, is scheduled for March 25-28 at the Opryland Hotel in Nashville.

The sponsor has scheduled 29 sessions on hardware, languages, software, applications, management and marketing relating to TI products.

At-the-door registration for the full symposium costs \$190 for TI-MIX members and \$205 for nonmembers. One-day registration costs \$80 for members and \$95 for nonmembers.

Further information is available from TI-MIX 1984 Symposium, P.O. Box 2909, M/S 2200, Austin, Texas 78769.

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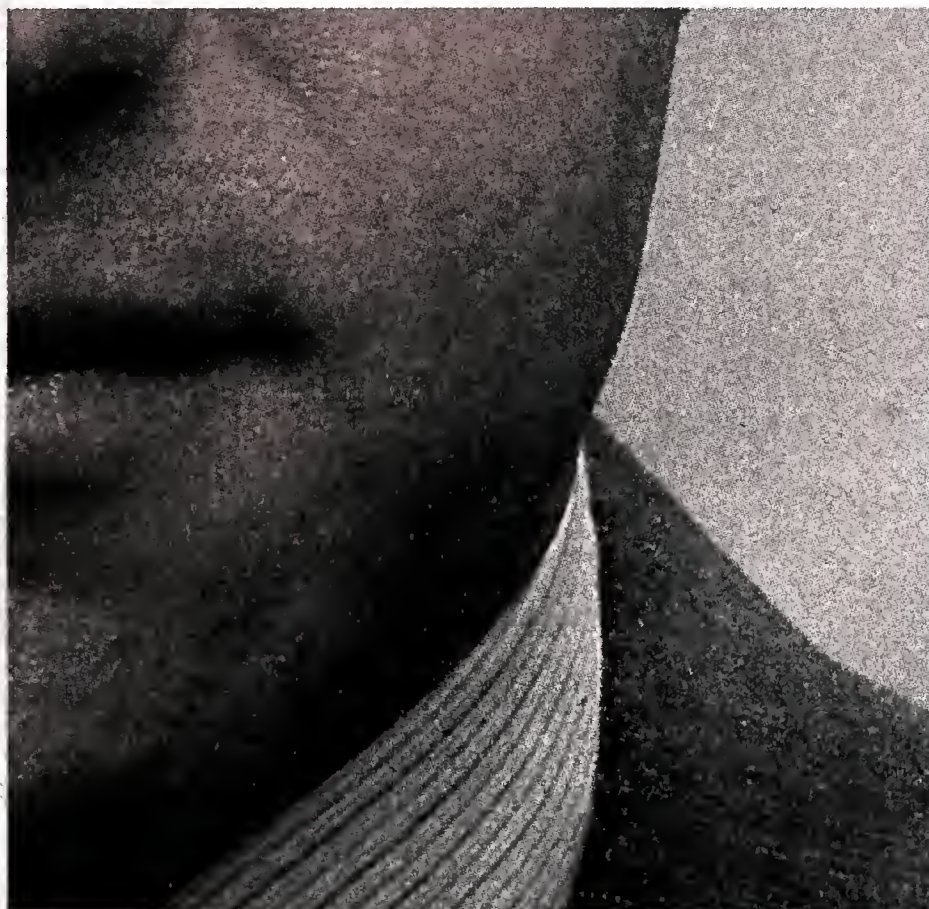
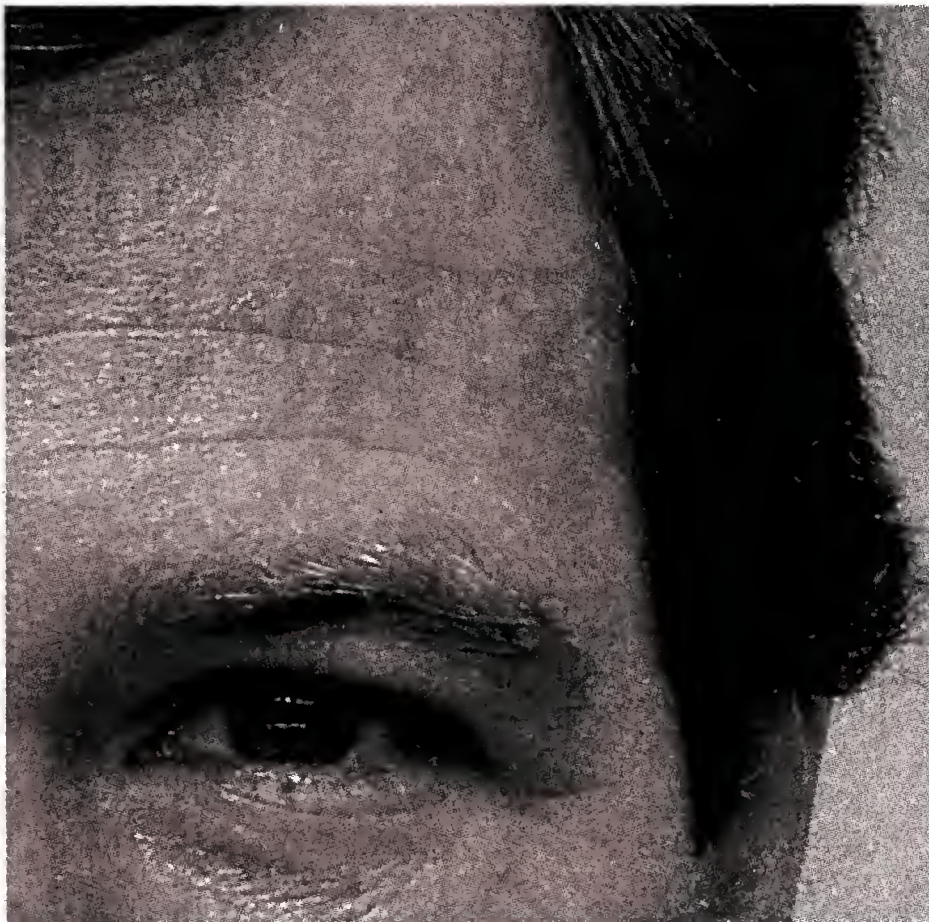
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## NEWS



## CALENDAR

## WEEK OF MARCH 18

MARCH 19-23, SANTA FE, N.M. — **Structured Analysis and System Specification Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, HOUSTON — **Structured Systems Analysis.** Contact: Learmonth and Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

MARCH 19-23, BOSTON — **Structured Analysis for Real-Time Systems.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, ORLANDO, FLA. — **IDMS Programming.** Contact: Harris Education Center, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

MARCH 19-23, MINNEAPOLIS — **Structured Design Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, WASHINGTON, D.C. — **Unix for the DP Professional.** Contact: Webco Industries, Inc., 8513 Washington Ave., P.O. Box 15505, Alexandria, Va. 22309.

MARCH 19-23, RICHMOND, VA. — **Advanced Systems Analysis.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

MARCH 19-23, DALLAS — **Data Base Concepts and Design.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

MARCH 19-23, INDIANAPOLIS — **Structured Design and Programming Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, ORLANDO, FLA. — **Tutorial Week East '84.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 19-23, PHOENIX — **Structured Design for Real-Time Systems.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, INDIANAPOLIS — **Information Modeling Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

MARCH 19-23, CHICAGO — **Structured Analysis and Design Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held March 19-23 in San Francisco.

MARCH 19-23, DALLAS — **Computer Capacity Planning for Sperry Corp. 1100 Systems.** Contact: Computometrics Training Institute, P.O. Box 3015, Commerce, Texas 75428.

MARCH 19-23, CONCORD, MASS. — **C Programming Workshop.** Contact: Plum Hall, One Spruce Ave., Cardiff, N.J. 08232.

MARCH 19-30, PARSIPPANY, N.J. — **OS/370 Assembler.** Contact: Chubb Institute, 8 Sylvan Way, Parsippany, N.J. 07054.

MARCH 20, ORLANDO, FLA. — **The C Programming Language.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 20, ORLANDO, FLA. — **Local Networks.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 20-21, SAN JOSE, CALIF. — **Implementing Voice Technology.** Contact: Patti Restaino, Votan, 4487 Technology Drive, Fremont, Calif. 94538.

MARCH 20-23, BOSTON — **CAD/CAM Systems.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, Los Angeles, Calif. 90045.

MARCH 21, ORLANDO, FLA. — **Small Computer Local-Area Networks.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 21, ORLANDO, FLA. — **Software Quality Assurance.** Contact: IEEE Computer Society, P.O.

Box 639, Silver Spring, Md. 20901.

MARCH 21, ORLANDO, FLA. — **The Unix Operating System.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 21-23, WASHINGTON, D.C. — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 21-23, SUNNYVALE, CALIF. — **Structured Design Seminar/Workshop.** Contact: Oberland Associates, 4036 N.E. Sandy, Portland, Ore. 97212.

MARCH 21-23, SAN FRANCISCO — **Personal Computers: Strategies for Managing.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 21-23, ZURICH — Inter-

national Symposium on the Performance of Computer Communications Systems. Contact: Harry Rudin, IBM Research Laboratory, Saumerstrass 4, CH-8803 Ruschlikon, Switzerland.

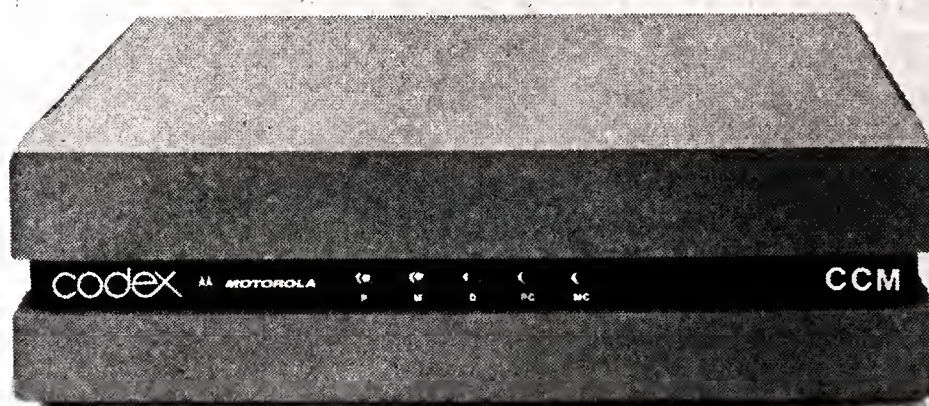
MARCH 21-23, NEW YORK — **Systems Analysis and Design: Concepts and Effective Practices.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 21-23, COLORADO SPRINGS — **Presentation Techniques for MIS Managers.** Contact: Claire Newkirk, Newkirk Associates, Inc., 1550 Oak Hills Drive, Colorado Springs, Colo. 80919.

MARCH 21-23, SAN FRANCISCO — **Information Center Concepts: Organization and Implementation.** Contact: Datapro Research Corp.,

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**MARCH 22, ORLANDO, FLA. — Computer Communications Protocols.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

**MARCH 22, ORLANDO, FLA. — Reusable Software Engineering.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

**MARCH 22, ORLANDO, FLA. — Unix Systems on Small Computers.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

**MARCH 22-23, NEW YORK —**

**Telecommunications Management in the Post-Divestiture World.** Contact: Marilyn Chasteen, The DMW Group, Inc., 2020 Hogback Road, Ann Arbor, Mich. 48104.

**MARCH 22-25, SAN FRANCISCO — The Forth Interest Group (FIG).** Contact: FIG, P.O. Box 1105, San Carlos, Calif. 94070.

**MARCH 22-25, SAN FRANCISCO — The Ninth West Coast Computer Faire.** Contact: Computer Faire, Inc., Northern California Office, 570 Price Ave., Redwood City, Calif. 94063.

## WEEK OF MARCH 25

**MARCH 25-28, NEW YORK — The Third Pansophic Users Learning and Sharing Exchange Conference (Pulse).** Contact: Karen Taylor,

National Pulse Coordinator, Pansophic Systems, 709 Enterprise Drive, Oak Brook, Ill. 60521.

**MARCH 26, ST. LOUIS — MicroFCS.** Contact: Evaluation and Planning Systems, Inc., Suite 1540, 110 Plaza, New York, N.Y. 10119. Also being held March 27 in Stamford, Conn.

**MARCH 26, NEW YORK — Introduction to the IBM PC.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

**MARCH 26-27, SAN FRANCISCO — The Impact of the Computer Revolution 1984.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-27, ROCKFORD, ILL. — Microcomputers: A Tool for Increased Productivity.** Contact: Asso-

ciation for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

**MARCH 26-27, SAN FRANCISCO — IBM Systems Network Architecture: A Master Plan for Teleprocessing.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 26-27, DALLAS — Rapid Prototyping.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

**MARCH 26-27, HOUSTON — Managing Projects in the Structured Environment.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-27, COLUMBUS, OHIO — CBT Ease Authoring Workshop.** Contact: Goal Systems International, Inc., 5455 N. High St., Columbus, Ohio 43214.

**MARCH 26-27, ROCHESTER, N.Y. — Dbase II.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held March 28-30 in Albany, N.Y.

**MARCH 26-28, NEW YORK — Data Communications: Effective Network Design.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 26-28, WASHINGTON, D.C. — Structured Quality Assessment Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-28, DENVER — Advanced Office Automation for the 1980s.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880.

**MARCH 26-28, WASHINGTON, D.C. — Microcomputers: A Guide to Selection and Application.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 26-28, BETHESDA, MD. — Strategic Data Planning Conference.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

**MARCH 26-28, NEW YORK — Data Communications for Microcomputers: Acquisition, Application and Implementation.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 26-28, STATELINE, NEV. — Planning the Automated Office.** Contact: Cyberserve International Co., 1091 W. California Ave., Mill Valley, Calif. 94941.

**MARCH 26-28, ATLANTA — The Data Entry Management Association (Dema) 1984 Conference and Seminar.** Contact: Marilyn S. Booke, Dema, P.O. Box 16711, Stamford, Conn. 06905.

**MARCH 26-28, CHICAGO — Data Base Management Systems: A Comparative Analysis of General-Purpose Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 26-28, WASHINGTON, D.C. — Strategic Data Planning Conference.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

**MARCH 26-28, CHICAGO — Data Communications and Networking for Personal Computers.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880.

**MARCH 26-29, NEW YORK — CICS/Testing and Debugging.** Contact: Comped Technical Corp., 10 E. 21st St., New York, N.Y. 10010.

See MARCH page 47

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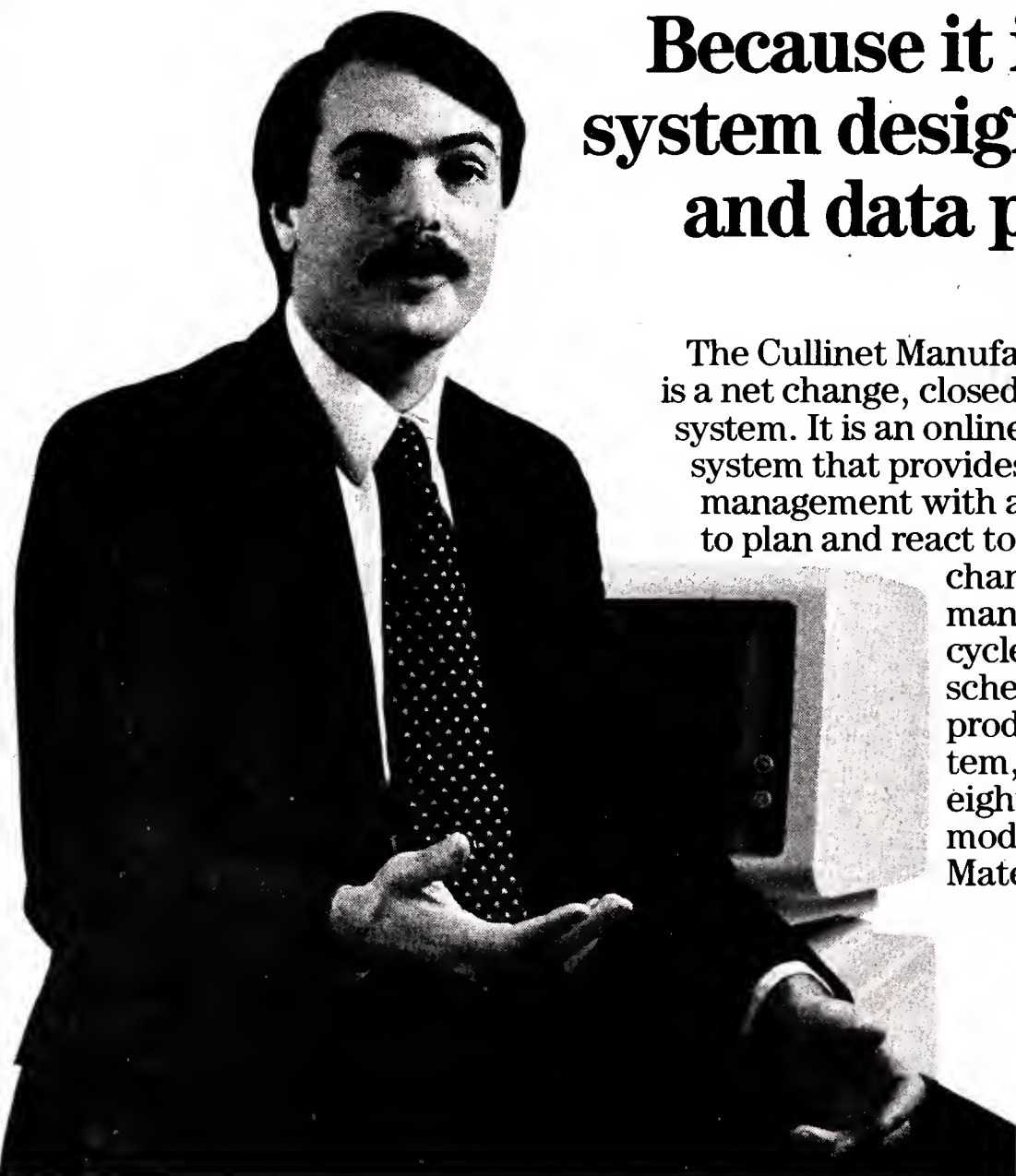
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Grand Rapids, MI	April 10	Rochester, NY	March 28
Meadowlands, NJ	March 7	Toronto, ON	March 20
Minneapolis, MN	March 28	Vancouver, BC	March 14
Montreal, PQ (Eng)	March 21	Washington, DC	March 8
New York /Rye, NY	March 13		

*\*Fred Buckley is Cullinet's Manager of Manufacturing Applications Software Development. His efforts have been crucial in achieving the integration that makes Cullinet's manufacturing system unique. Fred joined Cullinet in 1977. Fred holds a degree in Computer Science from Thames Valley State and is a member of the American Production and Inventory Control Society.*

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**MARCH** from page 43

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**MARCH 26-29, TORONTO — Advanced Interviewing and Analysis.** Contact: Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

**MARCH 26-29, ORLANDO, FLA. — The Seventh International Conference on Software Engineering.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

**MARCH 26-30, SEATTLE — Structured Analysis and Design Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-30, ORLANDO, FLA. — CICS Programming.** Contact: Harris Education Center, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

**MARCH 26-30, ATLANTA — Structured Analysis and System Specification Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-30, ST. LOUIS — IBM DB/DC Data Dictionary.** Contact: Joan Grillion, McDonnell Douglas Corp., P.O. Box 516, St. Louis, Mo. 63166.

**MARCH 26-30, PHILADELPHIA — Structured Design and Programming Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-30, LONDON — The 18th International Symposium on the Application of Computers and Mathematics in the Mineral Industries (Apcom) 1984.** Contact: Apcom

'84, The Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR.9 England.

**MARCH 26-30, WASHINGTON, D.C. — Structured Design for Real-Time Systems.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**MARCH 26-30, WASHINGTON, D.C. — Capacity Planning and Modeling.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

**MARCH 26-30, ROANOKE, VA. — Basic Systems Analysis.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

**MARCH 26-30, NEW YORK — Vsam Structure, Functions and Usage.** Contact: Sysed, One Park Ave., New York, N.Y. 10016.

**MARCH 26-30, ORLANDO, FLA. — Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, EDP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

**MARCH 26-30, CHICAGO — CICS/Command-Level Application Programming.** Contact: Compel Technical Corp., 10 E. 21st St., New York, N.Y. 10010.

**MARCH 26-30, CONCORD, MASS. — Advanced C Topics Seminar.** Contact: Plum Hall, One Spruce Ave., Cardiff, N.J. 08232.

**MARCH 26-30, HOUSTON — Structured Systems Design Workshop.** Contact: Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

**MARCH 27, NEW YORK — Spreadsheet Using Lotus 1-2-3.** Contact: Center for Advanced Data Pro-

cessing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

**MARCH 27, NEW YORK — Introduction to Dbase II.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

**MARCH 27-28, DAYTON, OHIO — The Eighth Annual Computer Fair.** Contact: Dan Schumacher, University of Dayton, 300 College Park Ave., Dayton, Ohio 45469.

**MARCH 27-29, NEW ORLEANS — SAS Processing Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

**MARCH 27-29, PHILADELPHIA — Structured Analysis: Tools and Techniques.** Contact: Mary Aliano, AGS Management Systems, 320 Walnut St., Philadelphia, Pa. 19106.

**MARCH 27-30, DALLAS — Structured Systems Designs.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

**MARCH 27-30, GENEVA — Technobank '84 International Exhibition of Technologies and Services for Banking and Finance.** Contact: Technobank, P.O.B. 625, CH-1211 Geneva 1, Switzerland.

**MARCH 28, NEW YORK — Dbase II for Application Development.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

**MARCH 28-29, AMERSFOORT, NETHERLANDS — The Second European Conference and Exhibition**

**on Developments in CAD/CAM.** Contact: Suzanne Mayhew, Oyex Scientific and Technical Services Ltd., Bath House 3rd Floor, 56 Holborn Viaduct, London EC1A 2EX England.

**MARCH 28-30, CHICAGO — Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 28-30, MIAMI BEACH — Frost & Sullivan's Sixth Annual Computer Graphics Conference: Forecast and Assessments.** Contact: Carol Sapchin, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

**MARCH 28-30, WASHINGTON, D.C. — Computer Operations: Effective Production Scheduling and Control.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

**MARCH 28-30, COLUMBUS, OHIO — CBT Course Design Workshop.** Contact: Betty Bruce, Goal Systems International, Inc., 5455 N. High St., Columbus, Ohio. 43214.

**MARCH 28-30, INDIANAPOLIS — Data Base Management.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

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**MARCH 28-30, LAS VEGAS — Data Communications Systems.**

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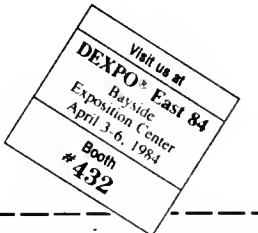
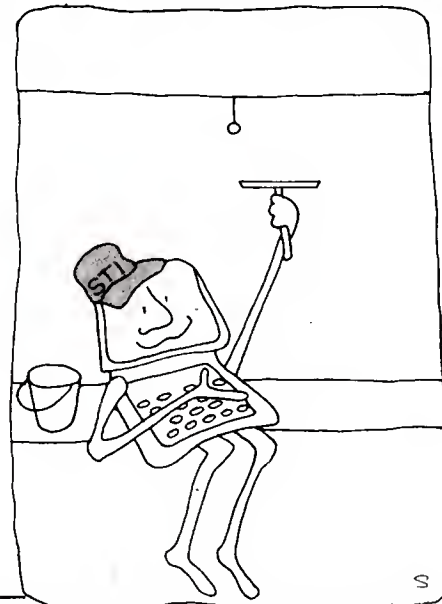
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# EDITORIAL

## A few lessons in salesmanship

Providing data security is a lot like staying in shape; everyone agrees it's a great idea, but most find it easier to talk about fitness than to run laps at the gym.

As indicated by a recent survey of the Data Processing Management Association, the vast majority of upper level managers concurs that corporate information assets should be protected [CW, Feb. 27]. But many firms surveyed in the DPMA poll allocate nothing for data protection, and most of those that do, actually provide very little in the way of funding.

It would be too easy and, perhaps, too simple to say that top management pays little more than lip service to what are, in fact, pressing data security needs that often go unmet. After all, if a stolen disk or tape shuts down the data processing department, top management will feel plenty of heat when the system failure bills are tallied.

Could it be, then, that DP and MIS professionals need a few lessons in salesmanship?

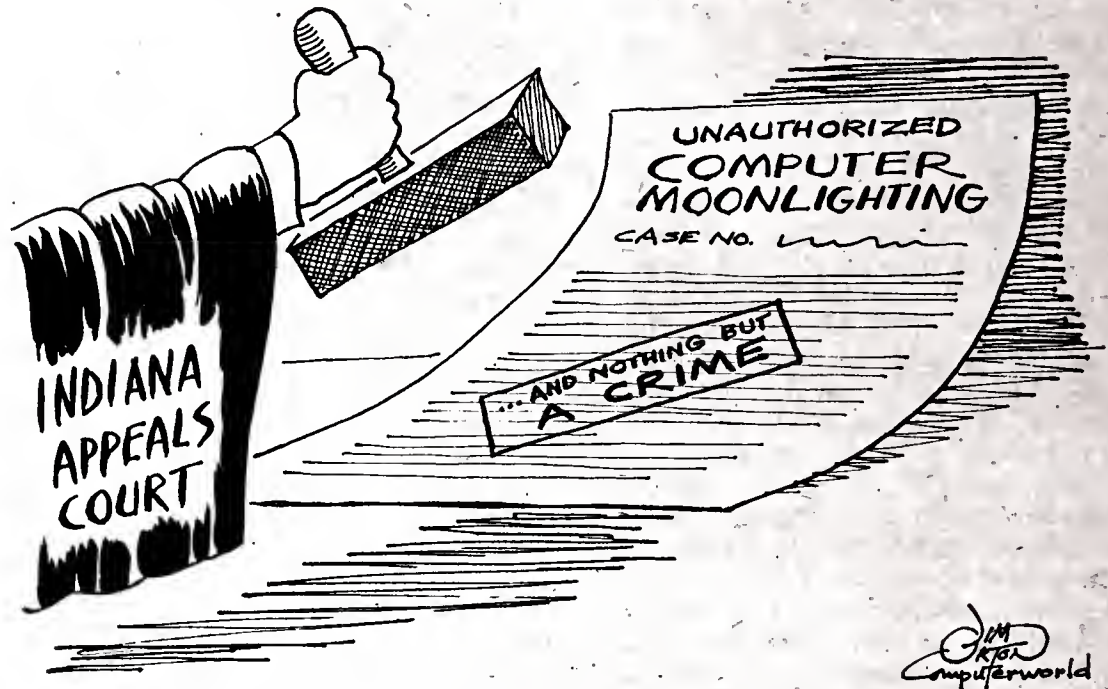
The DPMA members polled in the survey seemed to think so, given their recommendations for improving the funding of data security projects. But other, somewhat disturbing factors that have come to light recently indicate that top management may not be getting the security message all that clearly.

For example, Digital Equipment Corp. performed a comprehensive market survey prior to making a multimillion dollar commitment to establishing a nationwide records management network. DEC's survey indicated that most companies that tend to data security needs do so in-house, rather than using any of the growing number of off-site storage companies or disaster recovery services. The problem is with some of the security techniques being employed — such as that of a DP specialist in Boston who took sensitive tapes home each night and locked them in her closet.

In the more usual case, key disks and tapes are kept in storage cabinets, where they are easy marks for pilferers and saboteurs. According to the DPMA, the greatest threat to data security is misuse of data by in-house staffers, while other recent surveys and studies bear out the rising incidence of unprotected data being destroyed or altered. If management isn't acting forthwith to protect such vital corporate assets, perhaps the security sell job is falling short of illuminating the potential dangers of unguarded resources.

First, top management must realize that the expense of protecting corporate information assets is just another cost of doing business. This can only follow a detailed, unembellished and honest accounting of the DP shop's security needs — doomsayers need not apply for the sales job.

Also, bear in mind that top managers, like the end users the DP shop serves, are inherently solution-oriented. DPs, on the other hand, can be rather detail-oriented. There must be a meeting of the minds somewhere in the middle, with security concerns hanging in this balance.



Stamp of approval

## LETTER

### Challenging the view that superminis, CPUs in same performance class

Our management would like to challenge the contention in "IBM 4300 rivals reach 95 in number" [CW, Jan. 30] that superminicomputers and IBM mainframes are in the same performance class. We recently purchased a Prime Computer, Inc. Information supermini together with fully integrated application software (Manfact II), developed by Compufact of Santa Ana, Calif. Under the leadership of our plant manager, we installed order processing, sales history, payroll, materials management, a full complement of financial applications and replaced an IBM 4331 in less than nine months while reducing the MIS budget by 50%.

Using a query/report writer, our users have direct access to the entire production data base. System availability for the 23-terminal network has been very high, with less than five hours down-

time in 18 months.

An MIS manager concerned with cost-effectiveness and responsiveness of his department should consider the significant advantages superminis have over mid-range mainframes. These include ease of operation and installation and expansion without software conversion. Based on our experience, this kind of system could be installed for less than \$250,000.

**David L. Mayes**

Management information systems consultant  
Heatilator, Inc.  
Mount Pleasant, Iowa

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# VIEWPOINT

## The chrysanthemum or the sword



### LECHT ON SCIENCE

Charles P. Lecht

I was having breakfast at the Hotel Okura in Tokyo when I read in the Feb. 17 issue of *Japan Times* about the breakthrough: Hitachi Ltd. scientists had produced a high-performance circuit switch of silicon emitter coupled logic (ECL) that won the world speed record in the continuing race to produce faster signal processing capabilities. Registering gate delays of an astonishingly low 84 picoseconds through the usage of sidewall base contact structured (Sicos) transistors, the Hitachi achievement cuts, by two-thirds, previous gate delay records for ECL circuits.

According to Dr. Minoru Nagata, leader of the development team, "The Sicos logic circuits may well clear the way for the development of a future generation of ultrafast computers." What he means, of course, is that the incorporation of such high-speed gates into circuits on very large-scale integration (VLSI) chips can produce super-duper computers that'll beat the pants off any mere supercomputer known to science today. No doubt American scientists are working on similar and not so similar technologies to match and improve upon Hitachi's gate performance, but, for the moment, the Japanese fulfill our American dream of being No. 1, and they should be proud of this accomplishment.

After the flogging Hitachi took in the American press in late 1982 and throughout 1983, this early 1984 news may come as a surprise to our computer establishment. Publicly accused of obtaining U.S. technology illicitly and disqualified after having been low bidder for installation of computer systems into the same U.S. bureau (the Federal Bureau of Inves-

tigation) that helped smoke out what it was apparently up to, Hitachi was then shamed into telling its prestigious Japanese clientele that it would have to start paying software royalties to an American competitor for what was thought to be Hitachi's software.

Americans might well expect to be forgiven if they overlooked the fact that Hitachi was engaged in legitimate research of its own. By the volume of reports of Hitachi's misdeeds, some Americans may have even concluded that Hitachi had converted all its research microscopes into spy telescopes and sent its scientists to America to seek our hot research results, possibly reading these from the desks of our inventors from trees outside their suburban office windows and posting these to Tokyo before they cooled. Now it turns out that at least some Hitachi researchers must have stayed home — however else could they have had the time to make their new "picoswitch?" They've got to be "clean" on this one, folks; you can't copy and be No. 1.

Which brings me to the point of this essay. Hitachi's success comes only a few days after Fujitsu Ltd. sent a 1984 valentine to the American supercomputer community in the form of an announcement of a computer system with the curious capacity to run programs written for IBM 370 lineage systems while doing the number crunching expected of the next generation of Cray Research, Inc.'s latest supercomputer and Nippon Electric Corp.'s (NEC) announcement of a 1.3G-byte processor.

#### American/Japanese relations

These 1984 "openers" from Japan should provide the U.S. computer systems manufacturing and user community with reason to pause to think about American/Japanese science relationships and their future. They signify to me that the timing

couldn't be better for American and Japanese scientists to seek increased cooperation in basic research.

The Japanese computer industry is still very small in comparison with our own, less than 10% in dollar volume of world sales, most of which occur in Japan. While short on income, it is long in brains — the stuff that counts in creating competitive products. VLSI improvements (like Hitachi's), new systems architectures (like Fujitsu's) and high-performance supercomputers (like NEC's) are essential to improve the price/performance potential of our products if we are to continue to maintain the world leadership in computer technology we currently hold.

Since at the present time the high-technology Japanese community is inclined toward American leadership and is itself a bastion of free enterprise that truly believes in our capitalist system of competition, we would minimally do well to nurture the status quo through friendship and mutual support of our common goals. These include world peace through world trade.

Of course we cannot easily forgive any company, Japanese or otherwise, that violates the just rights to ownership of the products of another company, be it American or otherwise. But forbearance and prudence must be exercised to overcome the inevitable disputes that have their origins in cultural differences and whose resolution defies logic. Hitachi's admission of its guilt and its settlement with the company whose rights it violated were exemplary in this sense. Nothing could be gained by our continued punitive interest in this affair, except, perhaps, a lessening of friendship with the Japanese computer industry, which is compelled to notice that very few Japanese computer systems products have ever made their way to American users, while ours still account for most of

their installed base.

Japan's population is roughly half the size of ours. Together we account for less than 10% of the population of our global community, but roughly 80% of its computer systems business income.

Nothing new like Hitachi's breakthrough has emerged in years from our European colleagues, save perhaps those working in American companies abroad. The stagnated European computer systems industry cannot help but notice that the vital ingredient it lacks, namely, research for development of indigenous products, is available in Japan. Many American companies have noticed this and have benefited by innovation in Japanese research. Better cooperation with Japanese technology companies by American industry will ultimately stop the trend of Europeans to play one against the other in a competition that benefits neither.

Since we, at the moment, hold world leadership in almost every research, development and manufacturing category, the negative effects of an increase in cooperation, when compared with those accruing from an increase in competition, seem preferable to me.

#### Negotiation would help

Negotiation for better cooperation from a position of strength in international marketplaces would help us. That America's international marketplace strength is diminishing is evidenced by our diminishing world marketplace share. That this is occurring during a period of intensive home growth, and at a time when creating computer systems is possible by all developed countries, should provide some measure of comfort. But today's vitality of our computer industry and tomorrow's promise have not diminished one iota, by my reckoning, international marketplace

See JAPAN page 52

## Bargain basement personal computer clones: a play



### HUMAN CONNECTION

Jack Stone

I'm askance at how IBM Personal Computer "cloners" are claiming vast capabilities for their machines while cutting their prices to levels that seem to be only a hair's width away from manufacturing costs. It certainly does make the process of selecting a personal computer a confusing one, particularly for the millions of American fathers who are trying desperately to purchase an IBM-like machine for their prodigious programming/systems development offspring at prices that do not siphon off all the family wealth.

The time and place: Today, Big City, U.S.

The characters: Harold Rockman, well-to-do businessman. Jeremy Rockman, Harold Rockman's son.

The scene: Harold Rockman enters the living room, both arms loaded down with bundles of personal computer sales literature. He is wearing a wry smile, ready to enter what he believes to be the final and winning round of the year-long, computer-acquisition joust he's been having with his bright 11-year-old hacker/kid, Jeremy. The child comes skipping into the living room.

**Harold:** Jeremy, my beloved son, after long, agonizing hours of study and research, do I have the machine for you! Let me quote from the ad: "IBM Clone — The Sanyo 550 for Under \$1,000!"

**Jeremy:** Papa, dear papa, I find myself totally unable to comprehend how a processing device with qualities allegedly comparable to those of an IBM Personal Computer can possibly be marketed for a grand.

**Harold:** Well, then, kiddo, let me enumerate the ways. I submit that the Sanyo is the machine for you to

have and to hold from this day forward because you buy a load of features and functions for the buck. For instance, it positively glows with processing power, what with 128K bytes of random-access memory of the 16-bit variety oriented around Microsoft, Inc.'s MS-DOS, a vast improvement over the 8-bit, Digital Research, Inc. CP/M vintage machines.

**Jeremy:** You're turning my head.

**Harold:** Naturally, it has bundled software that meets your needs exactly. Like the word processing software Wordstar from Micropro International Corp.

**Jeremy:** Wordstar? That's so clumsy you need control keys just to control your control keys.

**Harold:** The Sanyo is a creature of modern times. It's loaded with program function keys.

**Jeremy:** How sweet it is! When do I hear the bad news?

**Harold:** To be sure, there are a few minor deficiencies, but I feel confi-

dent you can work around them.

**Jeremy:** Lay it on me.

**Harold:** Well, for one, it's slightly shy of a monitor. But don't worry about it. One of the fellows at the office told me we can pick up a used one from the classified ads. And then it's somewhat short of a second disk drive. But better one drive than a tape cassette recorder. Of course, we'll have to add a printer, but that's not too bad a problem. I saw a preowned daisywheel job advertised for under \$300.

**Jeremy:** Is it the one that speeds along at all of 10 char./sec.?

**Harold:** Okay, okay. But it sure beats a pencil and paper. So my young friend, what do you say? Shall we make the big move?

**Jeremy:** Tell you what, pop. Why don't we just skip this generation and wait for AT&T to provide an IBM Personal Computer emulator on its soon-to-be announced Unix-driven 32-bit machine? ‡



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## VIEWPOINT

# Sharing perspectives on fifth generation

The article "Fifth generation poses challenge" [CW, Jan. 16] will, I hope, stimulate needed thought and action. In order to meet that challenge, however, it is important that we share further perspectives. Japan's Fifth-Generation Computer Systems (FGCS) Project is a 10-year, government-industry collaboration that was initiated in October 1981. The project's philosophy includes concepts of commercial applications and world preeminence, but transcends that with visions of meeting projected needs of "the economy and society of the future," providing

"new insights to and outlooks on the nature of intellect and knowledge," enhancing international understanding and cooperation and contributing to "more advanced, humane behavior" and, thereby, to a "more balanced society," the FGCS said.

## LETTER

In pursuing those goals, they seek far more than new architectures, packaging techniques, circuit substrates and further understanding of artificial intelligence concepts and their use in a computer system. Their concept of "data" is enlarged to "knowledge information." Whereas our AI seeks to work

in conventional computers, they are reconceiving "computers" entirely.

They seek to develop not only new theories, but also "the framework of a new theoretical system... a new system of theories," the FGCS said. Comprehensive and component theoretical grounding pervades their project as a fundamental requirement.

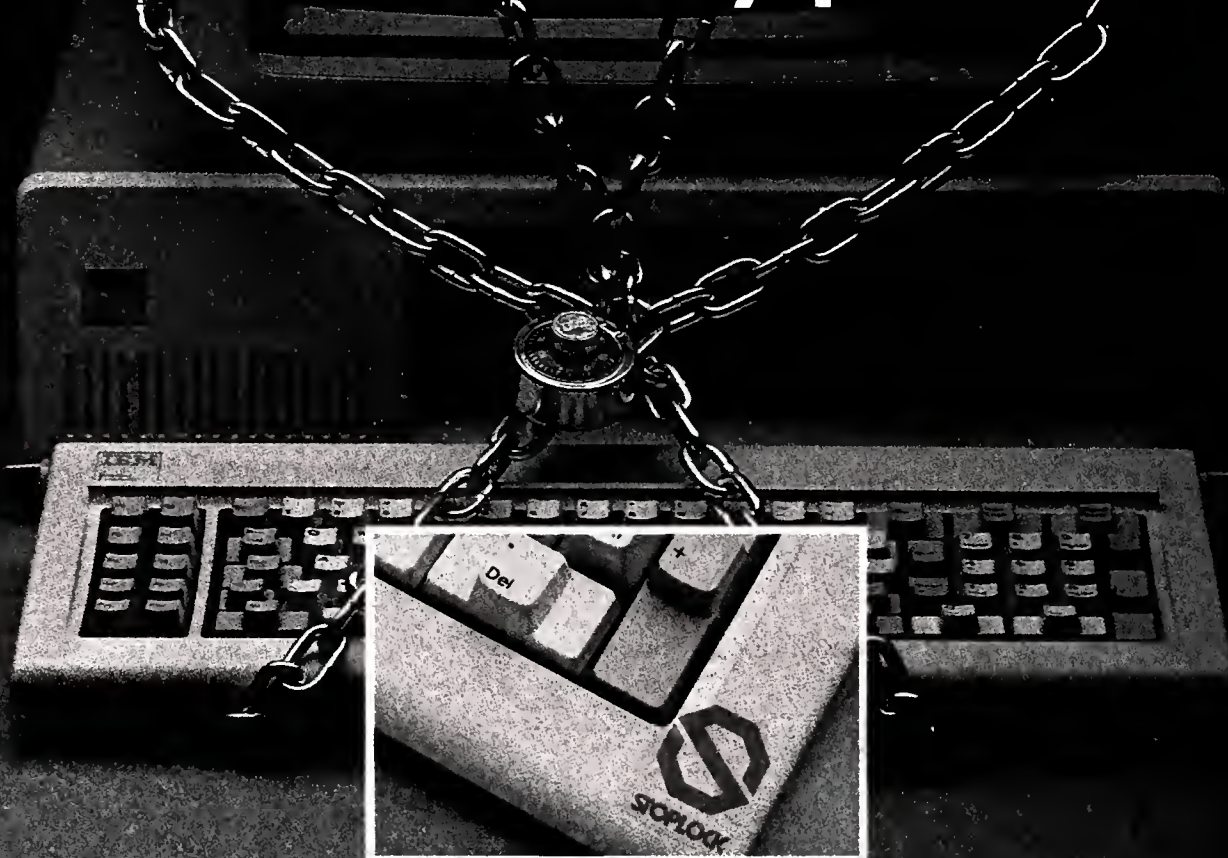
The article's concerns about the Defense Advanced Research Projects Agency (Darpa) being the prime money pump for our fifth-generation work are understandable, but can be assuaged by other considerations. Darpa's involvement is due not to the likelihood of initial fifth-generation

uses being military, but rather, to industry's default. However, Darpa's role does not preordain government control over the computer market.

Ironically, the U.S. fifth-generation computer industry may turn out to have been built on the foundation laid by U.S.- and Japanese government-sponsored research and development. For the Japanese project is a remarkable, open enterprise, involving extensive international cooperation and exchange programs.

**Stephen E. Seadler**  
President  
Uniconsult  
New York, N.Y.

## The PC security problem



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## JAPAN from page 49

diminution or not. It would follow that a revitalized cooperation between Japan and the U.S. could help bring to bear the best of both together to counter erosion in the foreign marketplaces of either.

And never has European dependence on U.S. technology in the key area of large systems development been stronger. With the opening of the new Chinese marketplace, only Japan has the capability to supply large systems technology, if it isn't acquired from us. Still trying to lessen imports of these systems from the U.S., Japan's export capability will be limited for some time to come. Would it not make sense to put Japanese/American computer systems affairs in the best of condition at this moment and, were it possible, to tighten business relationships to coordinate external sales efforts for mutual benefit? European countries create multinational joint venture companies to attack foreign marketplaces; aircraft produced by these companies fly all over America these days. Just think of the performance such a Japanese/American joint venture could expect in computer systems manufacture and sales.

Ruth Benedict's classic, *The Chrysanthemum and The Sword* (published by Meridian Books in 1946), provides Americans with a picture of the patterns of Japanese culture as perceived in America following the calamity of the early 1940s. Though the book is beautifully written, it still is hard for Americans reading it to understand the why's and wherefore's of Japanese thinking from its pages; for example, the story of the 47 Ronin. But one thing is clear throughout the text: The Japanese respect, even admire, American ingenuity and leadership. There have been startling changes since 1946 in Japan, but most have created a better alignment with our principles, be these in business or elsewhere. In view of what I perceive to be the case, Japan's computer industry may soon grow tired of offering chrysanthemums to potential American partners hoping for nothing more than fairness by anyone's standard. If this isn't in the offing, human mettle of the kind which swords are tempered may stiffen the resolve of a spurned Japanese industry to seek to redress their wounds elsewhere.

*Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.*



# SOFTWARE & SERVICES

## Using contractor offers advantages Timely completion of urgent tasks

By Richard W. Schiesser  
Special to CW†

Careful use of systems programmer contractors and consultants can provide important benefits to your data processing organization, especially when good programming talent is hard to find.

The Data Service Bureau of the city of Los Angeles provides data processing services to over 50 departments within the city as well as to over 60 outside agencies. Our annual budget is \$23 million, with a biweekly payroll of \$350,000 for 340 employees. We support dozens of applications for a broad range of city services as well as an information center.

The technical support section of the Management Services Division provides systems programming support, network support and long-range systems planning.

In late 1981, with several major projects and migrations beginning to occur at the same time, the technical support section faced a critical shortage of qualified systems programmers.

Among the solutions we selectively employed were to conduct more aggressive

recruiting through advertising and various job fairs. We also sought qualified personnel in other sections of the department or in other departments of the organiza-

### But some risks involved

Using contractors and consultants in a large programming environment presents some risks. Contracts that are based solely on time and material may result in work that is only partially or inadequately completed. An example is the installation of new software without proper training or documentation.

Another potential risk is that of ending up with unqualified personnel. Requesting recent references and thoroughly following up on them help

See RISKS page 61

tion. In specialized cases, personal service contracts for ex-employees were used.

We also used systems programmer contractors and consultants. However, differences between contractors and consultants have to be considered before hiring.

Contract systems programmers are typically oriented toward software internals, have recent detailed technical expertise and may assume some of the responsibilities of a lead systems programmer. A consultant, on the other hand, is more oriented toward conceptual viewpoints and the concerns of management.

Contractors are usually best used in control software installations, migrations, modified control software coding or maintenance of existing software. Consultants commonly deliver studies, analyses, methodologies and recommendations. A contractor is normally employed longer in a single engagement, may have less experience and will likely be less expensive.

In the first quarter of 1982, a contractor was hired to aid in the management of a direct-access storage device. By the second

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## Priming users for package installation

By Sheila M. Olsen  
Special to CW†

All too frequently, a software package that supplants the manual way a company does business meets with nothing but displeasure from those who are faced with using it. Certain guidelines that can help allay these complaints should be followed. Familiarizing the user with the capabilities of the software package, offering company-specific applications and making management's objectives for using the package clear to everyone will ensure a more successful implementation and help prevent "false starts."

The cry is often heard, "What's wrong with doing it the old way? No doubt, the "old way" worked and produced satisfactory results; however, someone high on

the hierarchical ladder saw the limitations and took action.

Old ways tend to be department specific. For example, a group of managers devised a way to acquire project totals. Management gave little consideration to standardizing reporting procedures since it received the required information. Additionally, other departments had their needs met with their own reporting procedures. With everyone generating the same information, but in a different manner, reverting to a manual method of reporting across department lines became necessary — a wasteful and inefficient use of resource time. In our quest for greater productivity, standardizing the way we do business makes retrieval of information easier and less costly overall.

When management has decided to implement software to facilitate its goals, the package should provide the functionality provided by the old method. Since today's packages are sophisticated in their specialized area, the potential exists to take the application beyond the functionality of the "homegrown" system.

Instruction in the full functionality of a software package helps users to comprehend this grand view and apply it to their specific needs. While application may be limited and somewhat basic during the initial stages of implementation, a presentation of its total capabilities will offer an awareness and an appreciation of the total package. Some users will never venture beyond the basics of the total package. Other

See USERS page 61

MVS/VS1  
Users

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## SOFTWARE &amp; SERVICES

# Mantis release features enhancements

CINCINNATI — Expanded interactive and operational capabilities for prototyping, documentation and file access are featured in Release 3.7 of Cincom Systems, Inc.'s Mantis application development system.

Enhancements in the new release include automatic access to the Logical User View (LUV) component on Cincom's TIS relational data base management system (DBMS).

Enhancements to the interface to IBM's DL/1 file structure include the unqualified Call Profile design facility, which provides a menu of options for handling DL/1 calls; Path Calls, which allows the user to use command codes to manipulate multiple

segments within a call; optional semi-reserved words in the interface area definition; data base access via logical or secondary indexes; prefixing; dynamic override of the program specification block name and program communication block number in a Call Profile; and use of Boolean commands to connect a segment search argument with the next argument list in the Call Profile search field list, according to a spokesman for the vendor.

A batch print facility allows for printing of all Mantis entities including screens, files and programs, the spokesman said. An enhanced create/update screen facility lets users

add or delete a line while updating a screen design without reentering data. It also provides for use of confirmation messages for library functions and includes an increase in interface parameters, an enhanced directory facility and the ability to run a program by name retry.

Mantis runs in Cincom's TIS-DC and IBM CICS environments and ranges in price from \$21,000 to \$59,000.

Mantis DBMS support and external LUV support each cost \$5,000. DL/1 support costs \$9,950, the vendor said.

Cincom is located at 2300 Montana Ave., Cincinnati, Ohio 45211.

# Netron's CAP modified to run on IBM CPUs

NEW ORLEANS — Netron, Inc. announced at the Softcon International Conference and Trade Fair for the Software Industry that its Computer-Aided Programming (CAP) software development system currently offered on Wang Laboratories, Inc. VS computers has been modified for use as a development tool for IBM mainframes.

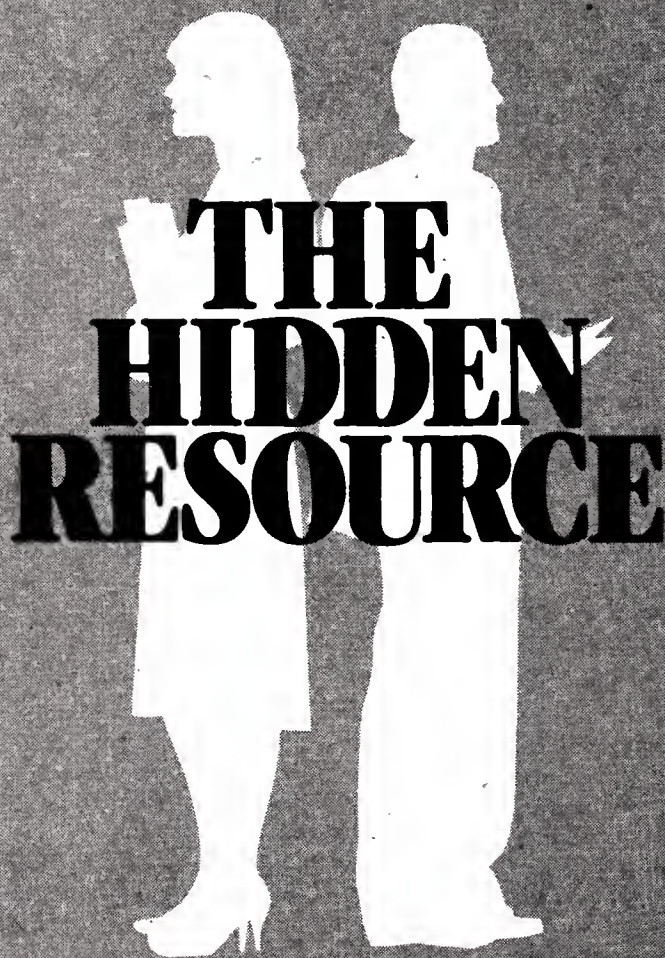
CAP employs reusable code, a high-level language and a "frame" concept that is said to eliminate most hand coding of standard applications. Users develop programs by filling in menu screens, and CAP generates most of the Cobol code. In addition, programs can be modified and customized using the high-level language.

Netron President Alex Risin said the new capability allows CAP to be used as a dedicated program creation tool in large IBM shops. The Wang VS can typically compile a 5,000-line Cobol program in under three minutes; code that is generated under CAP on the Wang VS can run immediately under IBM CICS, but cannot run on the Wang, he said. CAP supports fully interactive IBM 3270 terminal emulation.

Wang will not market CAP, but will publicize it to users through its technical symposia. With the IBM emulation capability, CAP requires IBM's MVS, CICS and Vsam files. It will be available in the fourth quarter of this year at a price of \$16,000 for the first terminal and \$8,000 for each additional terminal, according to the vendor.

Netron is located at 99 St. Regis Crescent N., Downsview, Toronto, Canada M3J1Y9.

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# V-Link joins VAX-11, Cray-1

KANSAS CITY, Mo. — United Information Services (UIS), a division of Control Data Corp., has announced a distributed data processing system said to connect Digital Equipment Corp.'s VAX-11 series superminis to UIS's Cray Research, Inc. Cray-1 supercomputer.

V-Link reportedly allows users to submit jobs to the Cray-1 from their VAX-11 environment. The system includes UIS's interface software; a communications processor; modems; and a dedicated, conditioned telephone line.

The system supports high-speed, high-volume throughput using 16K bit/sec lines. Also, V-Link commands conform to the DEC VMS standard, a spokesman said. Through V-Link, users can also use the UIS library of engineering programs, according to the vendor.

V-Link pricing includes a \$5,000 one-time installation fee and a \$5,000 monthly fee, which includes \$2,000 worth of Cray processing, the vendor said.

UIS can be reached through P.O. Box 8551, Kansas City, Mo. 64114.



## SOFTWARE &amp; SERVICES

## Omnibase on data base machine

GOLETA, Calif. — Signal Technology, Inc. has announced that its Omnibase data base management software is now being sold with the Britton-Lee, Inc. Intelligent Database Machine as a relational data base management system.

The package is designed to operate with multiple Digital Equipment Corp. VAX-11 superminicomputers, freeing the VAX-11s for uses other than data base management.

Omnibase is said to include Signal Technology's Opal programmers' applications library for accessing the Intelligent Database Machine through any VAX-11 host language,

and Signal Technology's Smartstar, a family of programs for applications generation.

The Intelligent Database Machine reportedly supports a data base of more than 10G bytes and can be connected to several VAX-11s with IEEE-488 parallel interfaces.

Prices for Omnibase range from \$17,000 to \$40,000, and prices for the Intelligent Database Machine range from \$45,000 to \$99,500, according to the vendor.

Additional information can be obtained from Signal Technology is located at 5951 Encina Road, Goleta, Calif. 93117.

## Easytrieve Plus gets update

OAK BROOK, Ill. — Pansophic Systems, Inc. has announced a new version of its Easytrieve Plus information retrieval and data management system. The system was formerly called PRO/grammar.

Enhancements to Version 4.0 include expanded reporting flexibility through the use of special logic procedures along with other options for the dictation of special formatting requirements. Improved file processing facilities now include a synchronized multifile input facility for an unlimited number of files.

An extended debugging and compile option capability has been added along with increased logic facilities, including logic statements and the

ability to use up to 18 digits automatically. The new release also incorporates object code creation capabilities and does not restrict the size of program and storage areas.

The new release will be offered to current Easytrieve and PRO/grammar users on maintenance at no charge. Easytrieve customers who purchased PRO/grammar prior to this announcement will be compensated based on their purchase price of the product and their length of use. Easytrieve Plus costs \$25,000 for IBM DOS users and \$35,000 for IBM OS users.

More information is available from Pansophic, located at 709 Enterprise Drive, Oak Brook, Ill. 80521.

## Facility out for Scanmaster

RYE BOOK, N.Y. — Claiming to have developed a new way for users of its 3270-type terminals to route and retrieve mail and documents, IBM has announced an Image View Facility for its Scanmaster I document transceiver. The facility is said to allow users of IBM's 3270-Personal Computer, 3278 CRT terminals, 3279 color CRT terminals, 8775 CRT terminals and the 3290 Information Panel to view images of documents such as signed letters, insurance application forms or line drawings.

IBM said the image viewing facility offers an alternative to manual filing, microfiche and optical disk systems.

Requirements for the Image View Facility are a processor employing 370 architecture (such as IBM 4300 series or 30 series processors) and a Scanmaster I. The facility operates as a CICS program in a Disoss/MVS Ver-

sion 3 operating system environment with Disoss/PS Release 1.1.

Also required is IBM's Graphical Data Display Manager Release 3 program product and IBM's PL/I transient library.

The facility works on any IBM 3270-type display equipped with at least six programmed symbols.

There is a one-time license fee of \$5,400 for the Image View Facility. The Scanmaster I, which was announced in 1982, is a Systems Network Architecture/Synchronous Data Link Control device which operates over switched or nonswitched communications facilities at speeds up to 9,600 bit/sec. The unit consists of a controller, scanner and printer and costs \$11,800, IBM said.

More information can be obtained from IBM Information Systems Group, 900 King St., Rye Brook, N.Y. 10573.

## Smartstar targets VAX/VMS

GOLETA, Calif. — Signal Technology, Inc. has introduced Smartstar, an applications generator for Digital Equipment Corp.'s VAX/VMS users.

The product offers Smartdesign, a user tool for specification of data records, field attributes and forms layout; Smartquery, a fourth-generation program for query, entry, editing and deletion of data records viewed

through a multiple window or scrolled forms; Smartcall, a programmer's interface to Smartstar through a runtime library; and Request, an integrated report and query system.

Smartstar ranges in price from \$4,080 to \$13,600.

Signal Technology is located at 5951 Encina Road, Goleta, Calif. 93117.

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## SOFTWARE &amp; SERVICES

## SYSTEMS SOFTWARE

DYNAMIC MICROPROCESSOR ASSOCIATES, INC.  
Termcom

Dynamic Microprocessor Associates, Inc. has introduced a terminal emulator that reportedly enables any microcomputer to replace dedicated terminals in communication with minicomputer and mainframe computers.

Termcom software permits local or remote communication between micros and mini or mainframe applications that were designed for specific terminals, a vendor spokesman said.

Termcom is available at two levels. Level 1 is said to emulate conversational terminals, but it requires

that features to be emulated are supported on the microcomputer. Level 2 does not require identical features; the buffered terminal emulator supports features found in block-oriented terminals, the spokesman said.

Termcom requires an asynchronous serial port. The product will work with the Zilog, Inc. Z80 microprocessor and the Intel Corp. 8086 and 8088 microprocessors. It is compatible with Digital Research, Inc.'s CP/M 80 and CP/M 86, Microsoft, Inc.'s MS-DOS, IBM's PC-DOS and Musys Corp.'s Turbodos operating systems.

The Level 1 costs \$145 and Level 2 costs \$180. Both are available now in minimum quantities of 50.

*Dynamic Microprocessor Associates, 545 Fifth Ave., New York, N.Y. 10017.*

MIRODA SOFTWARE ENGINEERING  
Genprep-1 price cut

Miroda Software Engineering has announced a price reduction for its Genprep-1 program product for IBM mainframes.

The price for a permanent license has been reduced, effective immediately, from \$3,000 to \$2,000.

Genprep-1, available for IBM OS, DOS and MVS operating systems, is a general-purpose language preprocessor. It reportedly provides character string and numeric variables, execution control statements, recursive macros and the ability to invoke user-written subroutines, according to the vendor.

*Miroda Software Engineering, P.O. Box 10089, Chicago, Ill. 60610.*

NICOLET ZETA CORP.  
ZDDM

Nicolet Zeta Corp. has announced a graphics capability package said to provide IBM mainframe users with the ability to create high-resolution pen plotter output.

The ZDDM software package functions as a postprocessor and reportedly converts IBM Graphic Data Display Manager (GDDM) code directly into the compact language used to drive all Nicolet Zeta Intelligent Pen Plotters. ZDDM is capable of reading all levels of GDDM, including Graphic Data Files.

The software costs \$1,795 and requires one of the Zeta plotters, which start at \$6,000, a spokesman said.

*Nicolet Zeta, P.O. Box 4003, 2300 Stanwell Drive, Concord, Calif. 94524.*

CHARLES RIVER DATA SYSTEMS, INC.  
UN/System V; Unos Rev. 4

Charles River Data Systems, Inc. has announced two additions to its software products, including an implementation of the Unix System V operating system that is compatible with its proprietary Unos operating system.

The UN/System V operating system features record and file locking, interprocess synchronization, shared data facilities, priority scheduling and real-time-oriented device driver interfaces.

The vendor also announced Rev. 4 of Unos, which adds terminal-handling features, expanded process/memory device control facilities and automatic bootstrapping to the proprietary operating system.

The two operating systems run on the vendor's Universe 68 family of computers.

The UN/System V operating system is priced at \$4,000; the Unos Rev. 4 costs \$3,000.

*Charles River Data Systems, 983 Concord St., Framingham, Mass. 01701.*

JOHNSON SYSTEMS, INC.  
Umax Version 3.1

Johnson Systems, Inc. has announced Version 3.1 of its IBM CICS Utilization Monitor and Chargeback System (Umax).

Version 3.1 includes full support for IBM's OS CICS/VS Release 1.6.1 and operating system release-independent real CPU time and paging statistics data collection. In addition, security enhancements permit screening of Umax transactions and prevention of unauthorized execution, the company said.

This release of Umax includes virtual storage constraint relief through individual file and program-level collection techniques as well as the addition of a file nesting-level indicator.

Release 3.1 of Umax supports OS CICS/VS 1.5, 1.6 and 1.6.1 and is priced at \$6,000.

*Johnson Systems, 8300 Greensboro Drive, McLean, Va., 22102.*

## ELECTRON INFORMATION SYSTEMS

## Micro asynchronous communications package

Electron Information Systems has introduced a new version of its micro  
**Continued on page 58**

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*You use personal computers to do your planning...*

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March 27	Stamford, CT	
April 2	Orlando, FL	
April 4	Tampa, FL	Ann Nacinovich 212/563-5656
April 6	Miami, FL	
April 10	Washington DC	
April 24	Hartford, CT	
May 1	New York City	
May 9	Philadelphia, PA	MIDWEST
March 12	Chicago, IL	
March 19	Cleveland, OH	
March 26	St. Louis, MO	
April 2	Houston, TX	
April 4	San Francisco, CA	WEST
April 11	Los Angeles, CA	
April 18	San Diego, CA	
April 25	San Jose, CA	
		Joanne Gray 408/292-6212

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We urge you to attend the MicroFCS Open House nearest you at 9:00 a.m., 11:00 a.m., 1:00 p.m. or 3:00 p.m. To ensure that we can give you our complete attention, please RSVP to the contacts in your region. By attending, you are eligible to win a free copy of MicroFCS.

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CW-AT



## SOFTWARE &amp; SERVICES

Continued from page 56

asynchronous communications package to interface the IBM Personal Computer and compatible equipment to Sperry 1100 mainframes, a vendor spokesman said.

According to the vendor, the software is an extended version of Digital Research, Inc.'s CP/M operating system with identical features, including 300 or 1,200 bit/sec asynchronous communications, Basic and assembler languages on the micro, Cobol and assembler on the Sperry 1100, menu-driven, with error correction and retransmit during file transfer.

System requirements include 128K bytes of random-access memory and one disk drive, according to the vendor spokesman.

The package is available for \$795, the spokesman said.

*Electron Information Systems, 5554 S. Prince St., Littleton, Colo. 80120.*

#### FOUR-PHASE SYSTEMS, INC. ATS/IV

Four-Phase Systems, Inc. has announced an asynchronous terminal simulator software program that reportedly enables users of its Series 4000 and 5000 computer systems to access remote computing and information services such as the Dow Jones News/Retrieval Service and Reader's Digest Co.'s The Source.

The ATS/IV, an addition to the vendor's Multifunction Executive (MFE) product line, is said to allow access to time-sharing networks, other host application programs, additional devices with an asynchronous Ascii interface and other vendor's systems, a Four-Phase Systems spokesman said.

The ATS/IV program reportedly accommodates 32 concurrent communication lines and up to 32 MFE users, according to the vendor spokesman.

The ATS/IV program is

priced at \$1,500 per copy with quantity discounts available.

*Four-Phase Systems, 10500 N. DeAnza Blvd., Cupertino, Calif. 95014.*

#### IMPACT SOFTWARE Stop-X37

Impact Software has introduced the Stop-X37, a program designed to stop B37, D37 and E37 abends in an IBM MVS environment.

Stop-X37 intercepts the job at the time of theabend, finds available disk space, allocates the space to the job and continues the job, the vendor said.

The user has control of which jobs are recovered and what recovery actions are taken. An audit trail is provided that documents each recovery, according to the spokesman.

A permanent license for Stop-X37 ranges from \$5,000

to \$10,000.

*Impact Software, Post Office/Drawer 1297, Atlanta Office, Stone Mountain, Ga. 30086.*

#### AMALGAMATED SOFTWARE OF NORTH AMERICA, INC. Manifold

Amalgamated Software of North America, Inc. has introduced Manifold, a multiple index support for the IBM

System/34. Manifold is for use with the vendor's Acceler8 system.

According to the vendor, Manifold enables any field (less than 30 bytes) to be used as an index to a data file. The programmer can decide whether to add an index entry to each index when an addition is made.

Manifold will be available the second quarter of this year. The price is \$1,200 for Acceler8 users or can be rent-

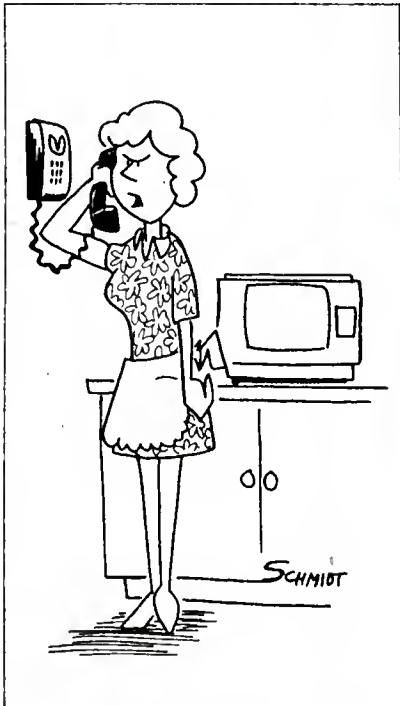
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## SOFTWARE &amp; SERVICES

ed for \$60 per month, according to the vendor.

*Amalgamated Software of North America, P.O. Box 1068, Malibu, Calif. 90265.*

#### SST COMPUTER SERVICES Movjob

SST Computer Services has introduced a software program that reportedly enables IBM System/38 computers to move jobs from an

inactive queue to an active job queue.

Called Movjob, the program permits users to move the job to another job queue without affecting the other jobs in the queue, according to a spokesman for the vendor.

The program is currently available and is priced at \$50 per CPU, the vendor said.

*SST Computer Services, 1112 St. Agnes Ave., Columbus, Ohio 43204.*

#### MACKINNEY SYSTEMS, INC.

JCLXREF; CICS/CEMT; Power Commander/CICS; Power Commander-Batch

MacKinney Systems, Inc. has announced four software products for programmers using IBM's DOS/VSE operating system.

JCL Cross-Reference (JCLXREF) reportedly reads JCL and produces cross-reference lists showing every

JCL member that uses each file, program or procedure, device, form and library. More than 30 optional reports can be generated in a single run, a spokesman said.

CICS/CEMT is said to allow CEMT commands to be issued from a batch job stream to open or close CICS files and disable transactions.

Power Commander/CICS is an interface between CICS and IBM's Power utility that

reportedly enables users to enter Power commands using a menu screen. Security logic can be added to limit certain terminals to certain commands or jobs, the spokesman said.

Power Commander-Batch is said to allow Power commands to be issued from a batch job stream.

When a job is completed, the spokesman said, the user can automatically release other jobs to run in other partitions.

The programs are available for purchase now for \$495. A one-year lease is available for \$195, the vendor said.

*MacKinney Systems, Rt. 2, Box 270-A, Fair Grove, Mo. 65648.*

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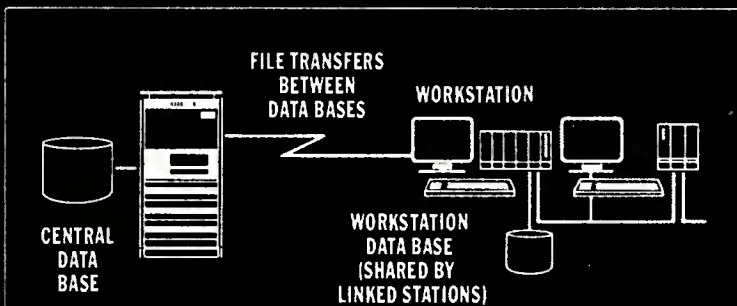
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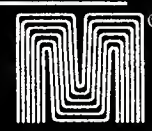
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## PRODUCTIVITY AIDS

### HELP/38 SYSTEMS Codebank

Help/38 Systems has introduced Codebank, a source code library system and self-customized program generator for the IBM System/38.

According to the vendor, Codebank lets users enter source code interactively by filling in blanks and allows them to enter, retrieve and change modules easily.

Codebank comes with more than 100 modules and seven program frames. Users do not need to wait until they enter their own source code to generate programs, the vendor said.

Codebank is priced at \$950 per CPU, according to the vendor.

*Help/38 Systems, 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55345.*

### INFORMATION BUILDERS, INC.

Focus training courses

Information Builders, Inc. has announced a series of training programs for Focus, its fourth-generation programming language.

"Focus Basic Report Preparation," which runs on the IBM Personal Computer, consists of 16 modules that explain query and reporting facilities, creation of master file descriptions, relational file operations and commands, the vendor said. The course costs \$5,000 for a site license which includes 10 copies of the course.

Also available is a self-study course booklet, "One Hour Focus Reporting Lesson," which costs \$3.50.

"Video-Based Basic Report Preparation" consists of five half-hour video tapes covering Focus concepts and report writing. The course sells for \$5,000.

*Information Builders, 1250 Broadway, New York, N.Y. 10001.*





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TO OUR RESPONSE  
TIME?  
MY PROGRAMMERS  
CAN'T GET ANY  
WORK DONE!  
E.B.

MEMO  
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configuration  
for the new  
3380's?

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WANTS TO SEE YOU	URGENT
RETURNED YOUR CALL	

Message: TERRIBLE  
RESPONSE TIME IN  
DETROIT OFFICE  
JUN 15

Operator: RR

Bob  
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THE NEW 4381?  
HOW LONG DO  
WE EXPECT IT  
TO SUPPORT  
US?

JR

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WAY TO IMPROVE  
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## SOFTWARE &amp; SERVICES

**JOBS** from page 53

quarter, a critical need in the CICS area became apparent. Since the contractor was both experienced and interested in CICS internals, he was transferred into the CICS group. He has since become a permanent employee and one of our most knowledgeable CICS experts.

Other successful hires in the second quarter included a contractor to work on network performance and consultants to assist in establishing a formal ongoing capacity planning program. They have had a very positive effect on the staff.

One of the primary benefits of using contractors or consultants is the timely completion of critically ur-

gent tasks. At the Data Service Bureau, several new functions of CICS required for an extensive law-enforcement system were installed, tested and implemented by a contractor.

Another advantage is that deliverables can have long-term benefits. Studies, analyses, recommendations, procedures, training guides and other forms of documentation can be referenced usefully even years beyond their origin.

A contractor can also offer candid observations on the operations of a shop. This is particularly true when the individuals involved come with a large variety of experiences in shops similar to your own.

Also, the requirement to

define clearly the work environment to an outside party can encourage a supervisor to improve the documentation and organization of assignments and responsibilities.

My foremost recommendation is that you have a clear understanding of your requirements, including deliverables and time frames. This enables a better evaluation of alternatives and a more straightforward choice.

Once the decision to hire a contractor or a consultant has been made, steps should be taken to minimize any negative impact on staff. Selecting personnel who are

both qualified and personable cannot be overemphasized. Consider global markets. Telephone interviews may be effectively conducted in these instances, particularly when prearranged out-lines are used among several interviewers.

A panel of at least two individuals should meet to interview the prospective candidates. This not only ensures a more thorough review of a candidate's qualifications, but may encourage greater staff cooperation by involving more of them in the decision-making process. A candidate's personality should be factored into the

evaluation to minimize negative impact on the staff.

Hidden costs such as travel expenses, per diems and administrative expenses should be clarified during evaluation. Other items to clarify involve guarantees about the quality and policies concerning which individuals will participate and replacement criteria.

A final recommendation when working with consultants is to express to them your nontechnical and management concerns.

*Schiesser is technical support manager in the city of Los Angeles' Data Service Bureau.*

**RISKS** from page 53

minimize this risk.

The inflexibility of contractual terms may prove to be a disadvantage if unforeseen circumstances shift the emphasis or direction of the work. In our case, the loss of an individual changed our priorities from direct-access storage device to CICS. Fortunately, flexible contract terms permitted us to respond with a contractor already on board.

A common risk among consultants is being less than candid with a client. To ensure future business or to please an acquaintance, a consultant may report only what a client wants to hear.

A final risk is the possibility of lowering morale among employees. We took several steps to avoid this. The first was to present fully to the staff the extent and impact of the vacancies. The second was to demonstrate what other alternatives were available and why they were inadequate. The third was to describe the various benefits that short-term technically qualified personnel could provide them.

**USERS** from page 53

ers will draw on its capabilities and acquire some expertise in its application.

Training in company-specific applications must supplement overall system instruction. This arena can provide the opportunity for presenting company standards, policies and procedures in light of the package's total capabilities.

Most importantly, management establishes the objectives for implementing the package and makes these objectives known to everyone who will be using the software system.

Finally, adequate training in the capabilities of a software package must work in conjunction with managerial direction and support.

*Olsen is project control coordinator at Wang Laboratories, Inc. in Chelmsford, Mass.*

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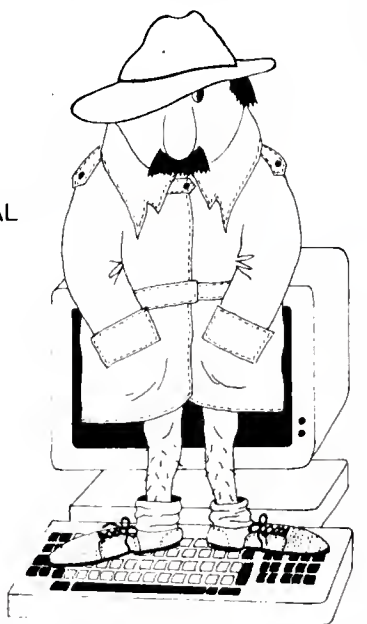
DEI also offers the ME-1, a Modem Eliminator with 2400, 4800, 9600 and 19.2 BPS. The ME-1 standalone model is completely compatible with RS-232C (CCITT V.24). All DEI products are operator-oriented and backed by the DEI five-star guarantee of quality and service.

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## SOFTWARE &amp; SERVICES

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APPLICATIONS  
Full MRP

Mini Computer Business Applications (MCBA) has announced its new Full Material Requirements Planning (MRP) package written in DIBOL.

According to the vendor, the new release closes the loop on the 17-package modular integrated MCBA Manufacturing System. It is available for Digital Equipment Corp. PDP-11 minicomputers under DEC's RSTS/E operating system.

The full MRP enables the user to create a master schedule and determine the quantities of raw materials, components and subassemblies required to support the

schedule. It generates a material plan by utilizing data from departments within the organization.

A source code license is available for \$4,000.

MCBA, 2441 Honolulu Ave., Montrose, Calif. 91020.

HEWLETT-PACKARD CO.  
'Steps to Effective  
Business Graphics'

Hewlett-Packard Co. has published "Steps to Effective Business Graphics," a 54-page book that explains how to prepare business graphics.

Seven steps guide the reader to design of business graphics. The book explains how to choose a chart, use design principles, write messages clearly and work with color, the vendor said. Subjects discussed include preparing proportional graphics, special effects for overheads and 35mm slide techniques.

The book costs \$12, according to the vendor.

Hewlett-Packard, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

ALGOR INTERACTIVE  
SYSTEMS, INC.  
Supersap

Algor Interactive Systems, Inc. has announced a package designed to help engineers and designers conduct finite element stress and heat transfer analysis in construction and manufacturing.

Supersap, developed for use on Prime Computer, Inc. 50 Series superminicom-

puters, reportedly includes preprocessing, modeling, linear elastic analysis and post-processing.

Options include interactive graphics, nonlinear analysis and Algor's Superdraw, an interactive design and drafting system, according to the vendor.

Supersap is priced at \$5,000.

Algor Interactive Systems, Suite L3, Essex House, Essex Square, Pittsburgh, Pa. 15206.

PROFESSIONALS  
UNLIMITED  
Software directories

Professionals Unlimited has introduced software directories for IBM System/34 and System/38 users.

The 1984 directories are sent on diskettes that can be viewed on-line or printed. According to the vendor, they are updated daily.

The directories are available directly from the vendor, priced at \$29.95 for the System/34 and \$49 for the System/38.

Professionals Unlimited, 3951 Lantern Drive, Silver Spring, Md. 20902.

ABACUS DATA  
SYSTEMS, INC.  
Eztag-M

Abacus Data Systems, Inc. has announced Eztag-M, described as an inventory count system for use with Arthur Anderson and Co.'s Macpac inventory system on Hewlett-Packard Co.'s HP 3000

processors.

According to a spokesman, Eztag-M is built on Abacus' basic physical inventory system known as Eztag. Eztag-M can be installed without changes to a user's Macpac programs or data base, and an initiator program will extract data from Macpac to support the system.

The system will print inventory tags for each part, showing the part description and unit of measure.

Written in Cobol II, Eztag-M is priced at \$2,400, according to the vendor.

Abacus Data Systems, 5000 W. Bloomingdale, Chicago, Ill. 60639.

N. DEAN MEYER AND  
ASSOCIATES, INC.  
'Get OA Moving'

N. Dean Meyer and Associates, Inc. has announced a training and consulting service designed to develop and implement office automation.

"Get OA Moving" is said to include a series of executive briefings, management awareness programs and pilot projects.

The service is priced at \$12,000.

N. Dean Meyer and Associates, 233 Mountain Road, Ridgefield, Conn. 06877.

KEY SOFTWARE, INC.  
Keysoft Order Management  
System

Key Software, Inc. has announced an order management system for distribution and manufacturing companies utilizing the IBM System/34 and System/36 small business computers.

The Keysoft Order Management System features order entry with flexible item pricing, automatic inventory allocation, real-time physical inventory update and on-line data entry to variable line screens, a spokesman said.

It also offers accounts receivable with cash applications and credit management, past payment performance histories and comprehensive financial reports.

Additional features include invoicing/billing with an automatic back-order system, inventory control with on-line planning and forecasting and sales analysis with multiple comparisons, the vendor said.

A one-time license fee of \$15,000 includes installation, training, documentation and code.

Key Software, 20212 Redwood Road, Castro Valley, Calif. 94546.

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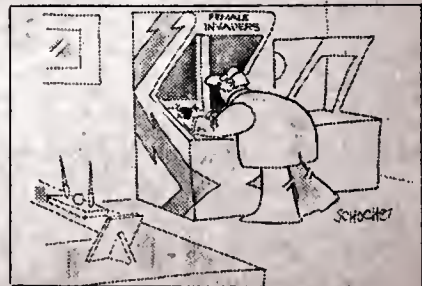
MAPS/GL was developed by Price Waterhouse under the name "FM80" and adapted for the VAX by Ross Systems, Inc.



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ICP Inc.



## SOFTWARE &amp; SERVICES

## DATA BASE MANAGEMENT SERVICES

### CONVERGENT SOLUTIONS, INC. ADS Release 1.5

Convergent Solutions, Inc. has introduced Release 1.5 of its Application Development System (ADS), a relational data base management system designed for the ven-

dor's equipment.

According to the vendor, access to the data base is through application systems built using a high-level, non-procedural, forms-oriented language. The ADS system may be used on a stand-alone workstation or a clustered configuration.

New features of ADS include an "Accept Invisible" command for security, multiple scrollable windows and system programming lan-

guage extensions.

The first cluster license is priced at \$6,000 and can support up to 16 users, according to the vendor.

*Convergent Solutions, Suite 900, 97-45 Queens Blvd., Forest Hills, N.Y. 11374.*

### INDECS SERVICES Version 3.1 of X-Cell

Indecs Services has announced Version 3.1 of its X-

Cell data management system for Digital Equipment Corp.'s PDP-11 processors in the DEC RT-11 environment.

According to a company spokesman, X-Cell is a data base and information retrieval system that features data entry and retrieval, sorting, report generation, numerical calculation and document-generator capabilities. The system is said to allow users to define and allocate field space for any combination of

alphanumeric and numeric entries.

Data base switching is done through a single menu entry, and numerical data fields can be defined by linear and nonlinear functions of other numeric fields, the vendor said. Under RT-11, X-Cell requires a DEC VT100 or compatible terminal.

Version 3.1 of X-Cell is priced at \$250 for a single copy.

*Indecs Services, 9 Pinecrest Drive, Taunton, Mass. 02780.*

### VISTA COMPUTER, INC. Datascan enhancement

Vista Computer, Inc. has announced an enhanced version of its Datascan data base management system, which is said to offer self-programming and improved query capabilities on Data General Corp. computers.

Datascan is designed for nonprogrammers and performs data management functions that include creating data entry screens and menus, reports, cross-tabulations, graphs and statistics, according to a vendor spokesman.

The self-programming feature is said to provide improved performance over fixed, table-driven systems. Datascan automatically writes custom programs for each screen, query or report, the vendor said.

A perpetual license for the product costs \$20,000 for a stand-alone version or \$25,000 for a DG AOS or AOS/VS operating system version, according to the spokesman.

*Vista Computer, 85 Executive Blvd., Elmsford, N.Y. 10523.*

### INFORMATION BUILDERS, INC. Describing Focus Files

Information Builders, Inc. is offering a computer-aided instruction course for users of its Focus nonprocedural data base management system.

The course — dubbed Describing Focus Files — functions in an on-line, interactive mode under IBM's Interactive Instructional Presentation System or Goal Systems Corp.'s Phoenix. It is self-paced, parallels Focus classroom instruction and can be customized to fit individual requirements, a vendor spokesman said.

Describing Focus Files consists of eight integrated modules, which cover building file definitions, relational operations and data base networking. The course provides computer simulation of live Focus sessions coupled with an interactive question-and-answer format.

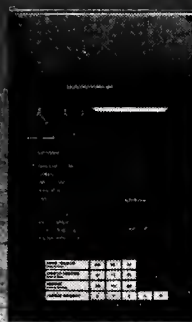
The course is available under IBM's VM/CMS, TSO, CICS or IMC/DC. It has a purchase price of \$3,000 or is

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## SOFTWARE &amp; SERVICES

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#### SOFTWARE HOUSE, INC. Version 2.0 of 1032

Software House, Inc. has announced Version 2.0 of its 1032 relational data base management system for Digital Equipment Corp. VAX-11 computers running DEC's VMS operating system.

Version 2.0 increases data security to the field level within a record and allows security restrictions to be set via password, user name or user identification number, according to the vendor.

The new release also allows users to change their minds about various data base defaults after loading data without dumping and reloading, the vendor said.

Version 2.0 of 1032 is licensed for \$40,000 for the VAX-11/780 and \$32,500 for the VAX-11/750. A 60-day, full-system trial of the product is available for \$85.

*Software House, 1105 Massachusetts Ave., Cambridge, Mass. 02138.*

#### LANGUAGES

##### CSP, INC. Mini-MAP Fortran compiler

CSP, Inc. (CSPI) has announced a Fortran compiler for its Mini-MAP family of array processors.

Designed to run on Digital Equipment Corp.'s VAX computers, the compiler generates code for execution on a Mini-MAP array processor interfaced to VAX-11, PDP-11 and LSI-11 products. The compiler processes Fortran statements and generates object code for direct execution by the array processor.

The Fortran compiler is priced at \$7,500 and will be available in May, according to the vendor.

*CSPI, 40 Linnell Circle, Billerica, Mass. 01821.*

##### NOVELL, INC. BI-286 Business Basic II capability

Novell, Inc. has announced that Control C Software, Inc.'s BI-286 Business Basic II interpreter works with Novell's Netware networking system.

Business Basic II is a programming language developed by Open Systems, Inc. Netware supports multiple printers, simultaneous file updating and a file manager, according to the vendor.

The system costs \$520 for two to six users, \$930 for seven to 12 users, \$1,380 for 13 to 24 users and \$1,725 for 25 to 64 users.

*Novell, 1170 N. Industrial Park Drive, Orem, Utah 84057.*

#### ON-LINE DATA BASES

##### DIALOG INFORMATION SERVICES, INC. Disclosure/Spectrum Ownership

Dialog Information Services, Inc. has introduced a data base that reportedly provides ownership information for 5,000 public companies in the U.S.

Disclosure/Spectrum Ownership is said to provide financial institutions,

managers and analysts with information about institutional holdings, 5% ownership details, ownership data and ownership summaries, according to the vendor.

The cost of the service is \$60 per hour of connect time and \$25 for each full record printed either on- or off-line, the vendor said.

*Dialog Information Services, 3460 Hillview Ave., Palo Alto, Calif. 94304.*

##### INFORMATION ACCESS CO. Search Helper enhancement

Information Access Co. has introduced an enhanced version of its Search Helper program that reportedly reduces by more than two-thirds the cost of conducting on-line searches of the vendor's literature indexes.

The enhanced program is said to enable the user to develop search parameters off-line using Eagle Computer, Inc.'s Eagle II, IBM's Personal Computer or Apple Computer, Inc.'s Apple II series microcomputers. The program then automatically dials Dialog Information Services, Inc., Information Access' data base vendor, and calls up the appropriate literature index, a vendor spokesman said.

The cost of each search is \$2.50, with up to 20 citations provided.

Search Helper is available for \$1,950, a package price that includes \$200 for a one-year license and \$1,750 for 700 on-line searches with up to 20 citations per search. Additional packages of 700 on-line searches cost \$1,750.

*Information Access, 11 Davis Drive, Belmont, Calif. 94002.*

#### METHODOLOGIES

##### VAN NOSTRAND REINHOLD 'Software System Testing and Quality Assurance'

Van Nostrand Reinhold has published a book for software specialists on the subject of system testing and quality assurance.

*Software System Testing and Quality Assurance*, written by Boris Beizer, is intended as a guide to the development and maintenance of reliable, high-quality software, according to the publisher.

The 384-page book contains 45 illustrations and costs \$34.50, according to the publisher.

*Van Nostrand Reinhold, 135 W. 50th St., New York, N.Y. 10020.*

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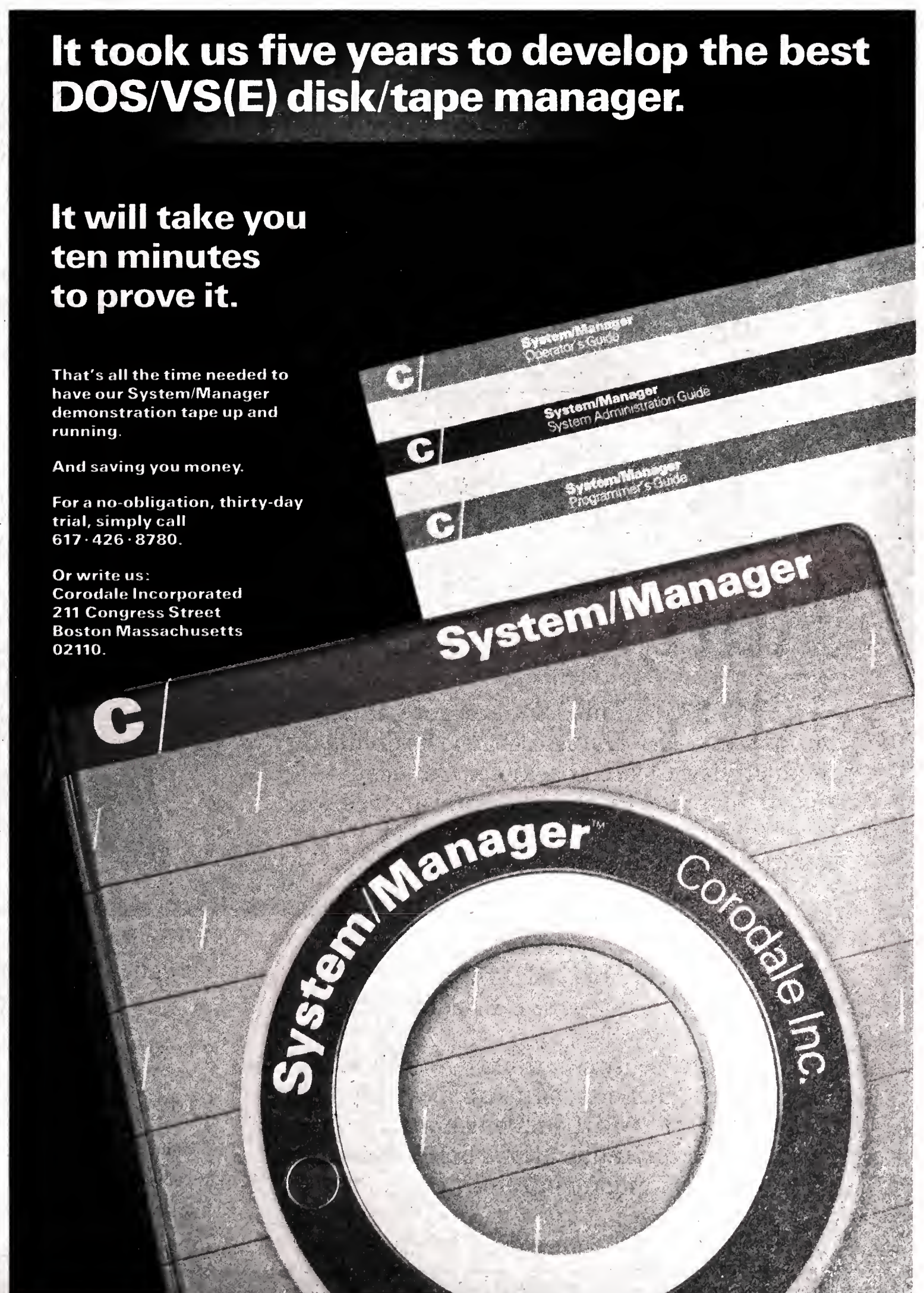
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CW 3/5/84



# COMMUNICATIONS

## Capitalizing on divestiture: US West Subsidiary to offer national communications services

OMAHA — US West, the regional holding company of three former Bell operating companies, is trying to capitalize on divestiture, the cause for its existence, by offering services designed to help companies stay afloat in the backwash of the Bell system breakup.

Interline Communication Services, Inc., a subsidiary of US West, will provide nationwide communications systems management services, as well as installation and maintenance support, to Fortune 1,300 companies. The company hopes to be operational in 30 major metropolitan areas by May.

"Now that the responsibility for the telephone network has been segmented among the seven new regional holding companies and AT&T," Interline President Paul J. Lee said, "telecommunications managers no longer have a single point of

contact to provide nationwide support at their headquarters and branch offices. Interline's strategy is to fill that void."

Consulting and engineering services available from the new organization will



reportedly include the evaluation of needs, the development of systems specifications and the recommendation of vendors whose equipment meets those specifications.

Interline said that it will not sell that equipment, mark it up or take a commission on any products that it helps to procure.

Once equipment decisions have been made, the company also offers wiring design and engineering services and will in-

stall the equipment, which may include telephone sets, cable and wire, private branch exchanges, key systems, computer workstations, data terminals, microwave links and other equipment, the company said.

At the customer's request, Interline will also act as the liaison with the local telephone company to arrange for installment of telephone trunks.

Ongoing maintenance services, provided by technicians in each branch office, are available on a contractual or an hourly basis.

All of these services are said to be available individually, according to Ronald A. Gelok, vice-president of Interline's Northeast region, so companies with large in-house communications management staffs may only use support in areas in which they are weak.

■ Bridge Communications, Inc. to offer Binary Synchronous Communications interfaces for Ethernet/68

■ New microwave TV service may offer interactive services/68

### INSIDE

Communications Controllers/69

Voice/Data Communications/69

Multiplexers/Modems/69

## College to install outlets for micros

By John Dix  
CW Staff

HANOVER, N.H. — Stereos used to be the entertainment focal point of a student's dorm room. But the personal computer may be changing that.

Harvard University said recently that beginning next year all new students in its graduate school of business would be required to have an IBM Portable Personal Computer.

Now, Dartmouth College has announced that it will wire the 30-odd dormitory buildings on its campus to provide "communications outlets" in some 2,600 rooms, a project that is being underwritten by a \$500,000 grant from the Pew Memorial Trust.

Students using Apple Computer, Inc.'s Macintosh personal computers, supplied by Apple at discount rates, and a variety of dumb terminals, will be able to plug into these outlets to gain access to the college's large time-sharing computer system.

Stanley Dunten, a systems engineer

with Dartmouth's Kiewit Computation Center, said that each dorm room on campus will be wired with four, telephone-type shielded wires.

All four wires will be needed to support Ascii asynchronous terminals like those networked in the college's present system (a wire each for ground, send, receive and a data terminal ready signal).

But it will be possible, Dunten said, to connect up to 32 Macintoshes on a single pair of wires configured as a bus. Access to the bus will probably be through a type of token-passing protocol that will be loaded into each Macintosh by diskette.

While the bus capability could be developed at the college, Dunten indicated a desire to wait and see if Apple will introduce a similar product, which would ensure a greater degree of compatibility with the vendor.

By using a bus to support a number of personal computers, all of the devices attached can be given host support through a single host access point. The decision to

wire with four wires instead of two was made because of the need to support Ascii asynchronous terminals, and because the wire cost less than the cost to install it, Dunten said. Given unknown future requirements, this leaves more options open.

The wiring of Dartmouth is slated to be complete by the time students roll back into town next September. But there may be a hitch.

The college has coaxial cable running to some of its dorms, but for the most part circuits leased from the local telephone company are relied on to tie campus buildings together. That telephone company now says that it cannot provide more of these links because it does not have the proper tariffs to provide intra-facility leased lines between buildings.

Dunten said the older leased lines were procured through a loophole found in the tariffs by a local telephone company sales person at one time, but that now the phone company cannot put its finger on that clause.

## Utility reduces errors with mobile terminals

By Lynn Haber  
CW Staff

TORONTO — A major power utility here is in the process of installing mobile digital terminals in its service vehicles to reduce communications errors and lessen radio frequency interference the company was experiencing with its mobile voice/radio system.

The system, being installed for North York Hydro by Mobile Data International, Inc. (MDI) of Richmond, British Columbia, includes 80 mobile digital terminals, a base station controller and a communications controller.

Another firm, Datap Systems of Calgary, Alberta, designed the overall system and wrote the custom software.

The utility is installing the mobile terminals, which are based on Zilog, Inc.'s Z80 microprocessor and include a small monitor and 48K bytes of memory, in its field service vans, supervisors' pickup trucks and construction trucks.

### Error-free messages

"Messages and forms are received error-free on the terminals and displayed or stored in terminal memory," MDI reported. "Field service personnel complete and retransmit the forms, which become part of a running record that is printed out at the host computer at the end of a shift."

Communications between the service vehicles and dispatch can be switched automatically between

voice and data. Supervisors at three dispatch centers can send single messages or broadcast selectively to a group of units or to all units.

Prior to installation, communications between the central office and the field units were via a two-way voice communications mobile radio system. The impetus to move to the MDI system came from the desire to integrate the company's UHF and VHF radio systems because, as two independent systems, users couldn't talk to one another.

"We also wanted to solve some [radio frequency] overcrowding problems we had during certain parts of the day and certain times of the year," said Michael Butler, director of customer services at North York Hydro.

Another advantage of the new system is that it allows a dispatcher to control the voice/radio system. According to Butler, with the old system, anyone could use it at any time by simply picking up a microphone, keying it and talking. Now a dispatcher controls all communications.

### Use drastically reduced

Butler said that with the new system, the use of voice communications has been drastically reduced, and the majority of communications with the service vehicles is via the terminals. "This is one of the things we were hoping for. Now we have virtually no traffic [radio frequency] congestion, which means we're more effectively utilizing the frequency resources

See MOBILE page 68



## COMMUNICATIONS

## Interface options let devices with BSC access Ethernet

CUPERTINO, Calif. — Bridge Communications, Inc. has introduced two interface options that reportedly allow any computer device equipped with IBM Binary Synchronous Communications (BSC) capability to access Xerox Corp.'s Ethernet local-area network.

Designed for use with the vendor's Communications Server (CS/1 and CS/100) network units, the CS/1-BSC and CS/100-BSC reportedly permit any computer or peripheral that communicates as an IBM BSC 3270- or 2780/3780-type device to utilize Ethernet for interoffice and inter-

network communications.

The CS/1 allows up to 32 devices with RS-232 or RS-432 serial interfaces to connect to an Ethernet network, the vendor said. The CS/100 links up to 10 RS-232 devices to Ethernet.

The CS/1-BSC, a CS/1 with the BSC interface, is available for \$9,900. The CS/100-BSC with four ports is priced at \$3,900; with 10 ports, it costs \$4,900, according to the vendor.

Bridge Communications is located at 10440 Bubb Road, Cupertino, Calif. 95014.

## Microband's Urbanet will go into operation in fall

WASHINGTON, D.C. — Interactive information services that are selected using a Touch-Tone telephone and displayed on a standard TV screen equipped with an interface device is one likely application of Urbanet, a wideband transmission system slated to be put into operation in New York, Washington, D.C., Milwaukee and San Francisco this fall.

Urbanet was developed by Microband Corp., a specialized common carrier that distributes pay TV programs through omni-directional transmitters in major cities. Micro-

band is a subsidiary of Tymshare, Inc.

Initially designed as a cheaper, more quickly implemented alternative to CATV, Urbanet will use microwave, one-way, addressable broadcast television technology. Viewers will receive the signals through a small antenna and an interface unit referred to as a "down-converter."

Later this year, Microband hopes to implement a system allowing subscribers to order specific TV programs using Touch-Tone telephones. By dialing a local phone number the subscriber will be connected to one of the 1,200 nodes of Tymnet, the packet-switched communications network operated by a subsidiary of Tymshare.

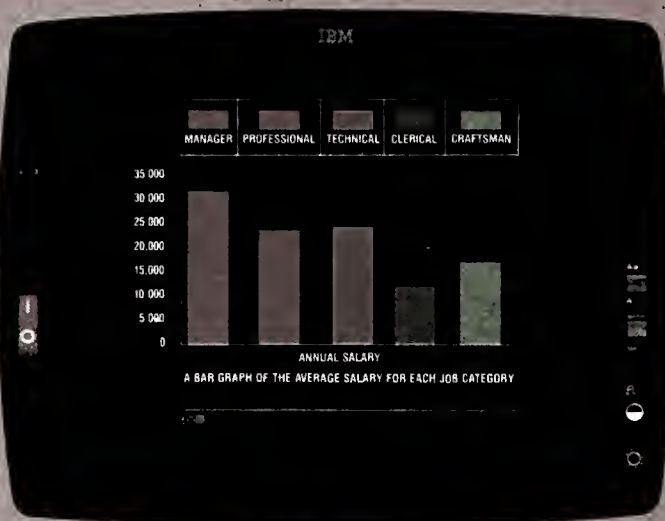
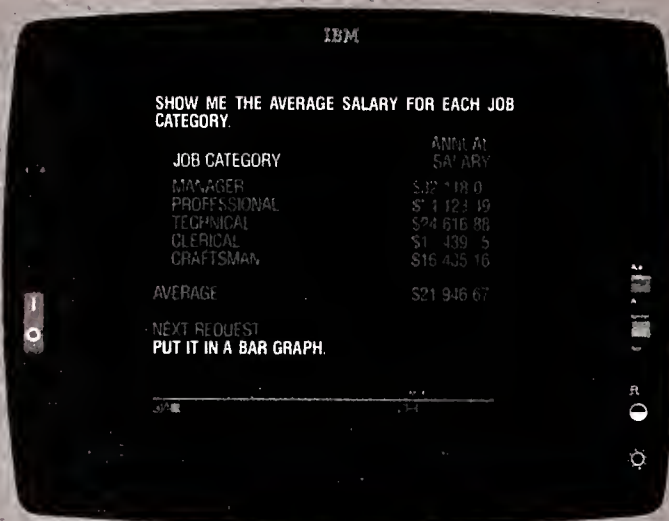
### Computerized voice system

A computerized voice system will guide the user in the selection of a program, which he will pick by punching a code number into a Touch-Tone key pad. This information, in packetized form, will then be routed by Tymnet to the Urbanet control center.

This capability will eventually enable the company to offer teleshopping and telebanking services, as well as the downloading of software to personal computers within the next few years, claimed Microband Board Chairman Mark Foster.

In addition to the cities scheduled to have Urbanet services this year, Microband has signed agreements to provide services in 1985 to Chicago; Philadelphia; Norfolk, Va.; New Orleans; Portland, Ore.; Kansas City, Kan.; Pittsburgh; Boston; and Tampa, Fla. Agreements are also being negotiated in about a dozen other cities as well, Foster said.

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## MOBILE from page 67

available to us."

System implementation was begun in October 1983. Total benefits of the new communications system won't be realized until it is completely in place.

In the future, Butler said the mobile computer system will be interfaced with other computer systems used by the utility, providing access to the in-house batch computer that handles trouble calls.



'The boss said he's going to replace me with a computer if he can ever find out what it is I do.'



## COMMUNICATIONS

## COMMUNICATIONS CONTROLLERS

NCR COMTEN, INC.  
3650 Models G9, H9, J9, K9

NCR Comten, Inc. has announced four models of its 3650 communications processor, each supporting up to 1M byte of memory in front-end and remote communications processor configurations.

The new 3650 models provide the same footprint characteristics as the recently announced 3650 Models G8 through K8 communications processors. Models G9 and H9 are for front-end configurations. Models J9 and K9 are remote concentrators, the vendor said.

The price for the front-end models configured with 512K bytes of memory, one IBM Channel Interface Adapter, a program load device and one communications interface module with attachment interfaces for eight modem interface modules is \$44,000.

The price for remote communications processor models configured with 512K bytes of memory, one communications interface module with attachment interfaces for eight modem interface modules and one NCR Comten DLC modem interface module for remote initial load capacity is \$46,000. A 512K-byte increment of memory is available for \$18,800.

NCR Comten, 2700 Snelling Ave. N., St. Paul, Minn. 55113.

## VOICE/DATA COMMUNICATIONS

NORTHERN TELECOM, INC.  
V.35 ADM

Northern Telecom, Inc. has announced the V.35 Add-On Data Module (ADM), a version of the ADM for use with its SL-1 digital private branch exchange.

The device provides CCITT standard V.35 interface capabilities while supporting all synchronous data features and capabilities of the SL-1 ADM, the vendor said.

The product permits synchronous data transmission at rates up to 56,000 bit/sec. It reportedly can be used with any synchronous protocol.

The price is \$1,100.

Northern Telecom, 1001 E. Arapaho Road, Richardson, Texas 75081.

## MULTIPLEXERS/ MODEMS

AUSCOM, INC.  
Model 8300 high-speed channel interface

Auscom, Inc. has announced the Model 8300 high-speed channel interface, designed to provide single-board interface to IBM byte multiplexers, block multiplexers and selector channel devices that have a serial or parallel interface.

The product operates under the control of its own on-board processor and can emulate any one of several control units, according to the vendor.

It can transfer data at rates of up to 500K bit/sec and also features a random-access memory buffer of up to 16K bytes.

The Model 8300 high-speed chan-

nel interface is priced at \$5,000, the vendor said.

Auscom, Suite 102, 2007 Kramer Lane, Austin, Texas 78758.

RACAL-MILGO, INC.  
Modem 112K

Racal-Milgo, Inc. has announced the Modem 112K, a 112K bit/sec modem designed for use in wideband carrier systems such as microwave and/or satellite networks.

The modem features full-duplex operation and manual down-speed switching for compatibility with the company's Modem 56K and for transmission over degraded communications lines. The modem incorporates diagnostics such as analog loop-back, data terminal equipment loop-back and data test, the vendor said.

The price is \$16,500.

Racal-Milgo, 8600 N.W. 41st St., Miami, Fla. 33166.

EMULEX CORP.  
CS32; Statcon Series 32

Emulex Corp. has announced the CS32 and the Statcon Series 32 communications multiplexers, which offer Digital Equipment Corp. VAX-11 series users expanded asynchronous line capabilities.

The CS32 is an asynchronous communications multiplexer subsystem capable of supporting up to 128 users. All CS32 lines have full modem control. The printed-circuit board controller installs in a DEC Unibus slot in a VAX-11 Unibus adapter chassis and requires only 4A of power from a 5V power supply.

The Statcon Series 32 adds multiple-link statistical multiplexing to the CS32 and is capable of handling up to 256 local/remote lines by the addition of from one to 16 CM22 port concentrators. The CM22 port concentrator is the link interface between the controller and the EM820 remote data concentrator, according to Emulex.

Functionally, the CM22 handles the link initialization and synchronization, link configuration, retransmission-on-error and other dialogue with the remote data concentrator, the vendor said.

The price for the 16-line CS32 is \$5,000. The 16-line Statcon Series 32, which includes the first CM22 port concentrator, is \$8,100.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

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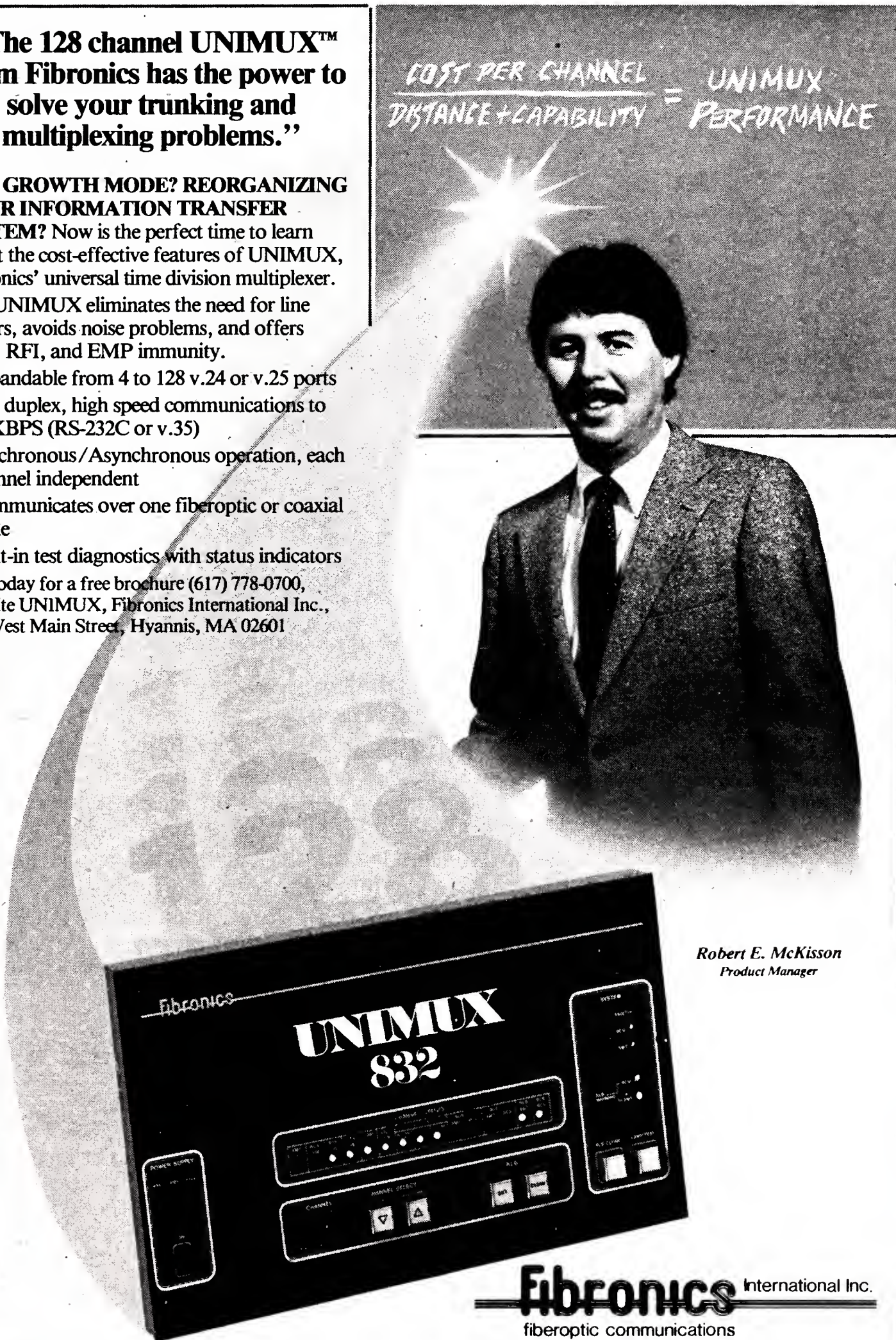
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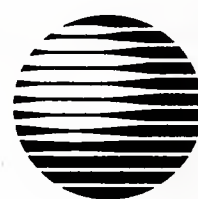
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# IN DEPTH

## An index of 1983 In Depths and Special Reports

In Depth presented 114 stories in 1983, full-length features on topics as diverse as software maintenance and protection, user friendliness, subsecond response time, relational data bases, computers in Japan and The People's Republic of China, SNA, the Cobol validation facility, computermarts, advertising and information centers. We interviewed Tom Watson Jr., William Norris and John Kemeny. We ran articles by such writers as Alan Westin and Peter Keen and excerpted *The Fifth Generation* and *High Output Management*.

And each month, the Special Reports section of *Computerworld* provided dozens of tutorials and applications stories targeted on one topic.

This index is intended to help readers locate articles on particular topics of interest from last year.

To order a back issue, write: Circulation Department, Customer Service, *Computerworld*, P.O. Box 880, Framingham, Mass. 01701. Each issue costs \$1.50 prepaid. Issues published on Feb. 21, Feb. 28 and June 20 are not available.

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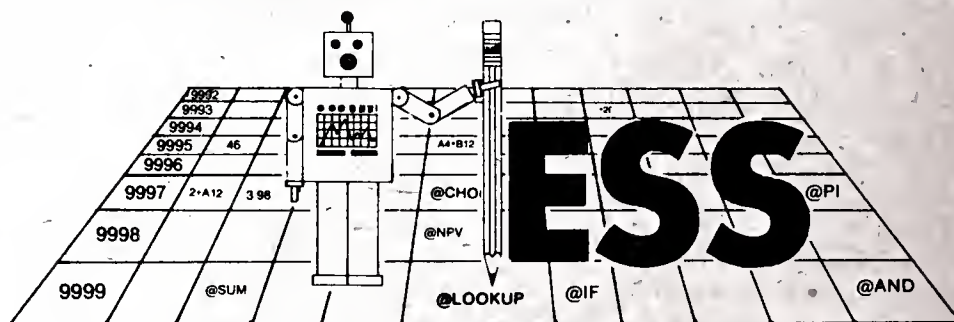
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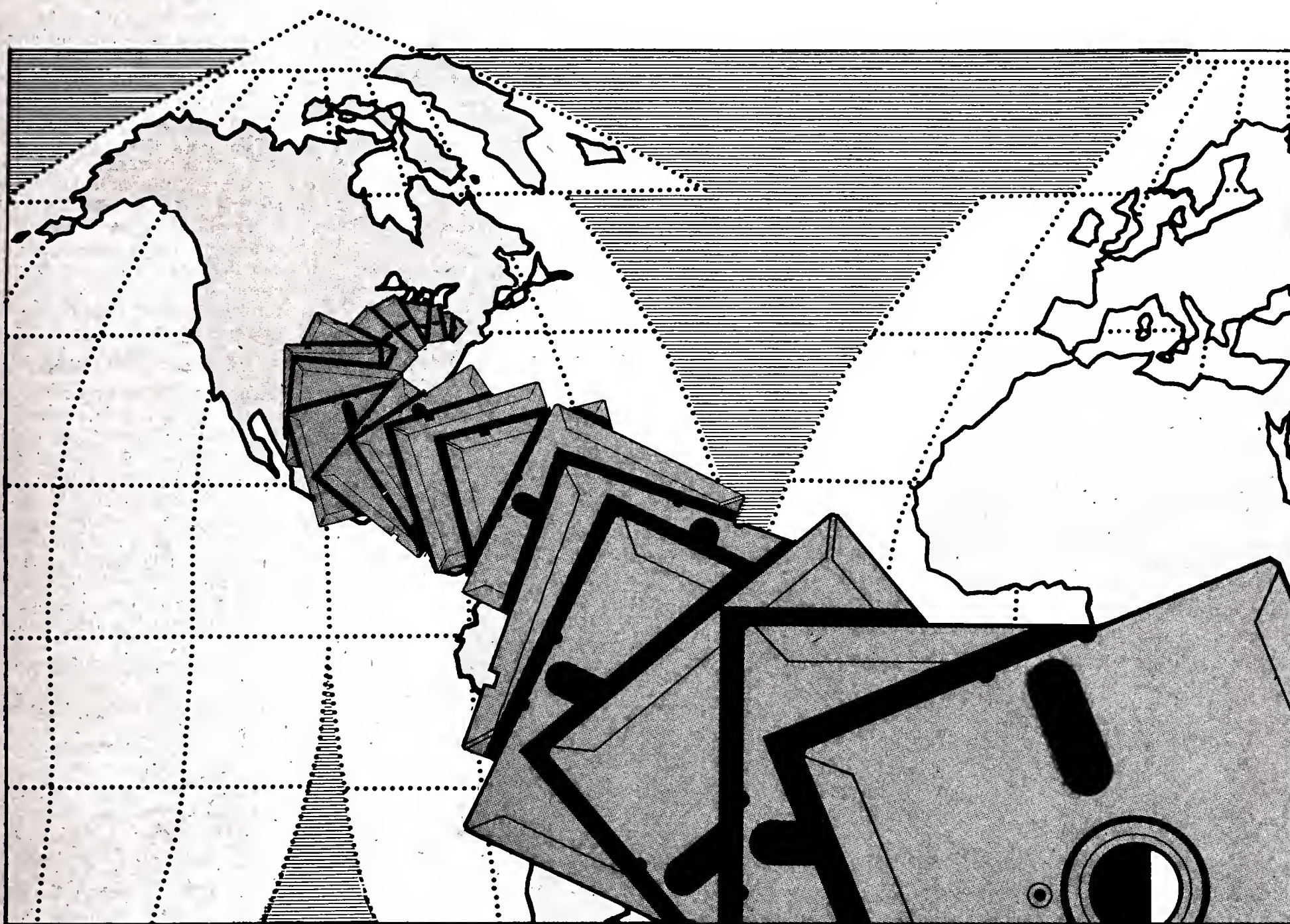
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# IN DEPTH



## Controls on software

# What can be exported where

By L.J. Kутten

**Federal law prohibits unlicensed export of "technical data" and certain commodities. All software is technical data since by its very nature, a computer must use software to be utilized. There are two federal statutes all exporters must be aware of: the Export Administration Act and anti-boycott legislation.**

U.S. statutes place firm controls over the export of software, whether it be developed in-house for internal use within a multinational company or for sale by a vendor. Failure to understand the terms of these statutes could bring substantial penalties for the user or exporter.

Federal law affects exactly what can be exported and to where. All exporters must be aware of the Export Administration Act (EAA) and anti-boycott legislation.

The EAA [now being considered for revisions] and its applicable regulations prohibit the export of "technical data" and certain commodities listed on the Controlled Commodity List (CCL) without prior authorization from the Department of Commerce Office of Export Administration (OEA). Copies of the regulations are available from either the Government Printing Office or the local field office of the Department of Commerce.

Exports of commodities and technical data from the U.S. are controlled for three

government policy purposes:

**National security:** The EAA prohibits export of those items that could make a significant contribution to the military potential of another country to the detriment of the U.S. Even the video display chips in many arcade games have military applications.

**Foreign policy:** Export controls can be used to implement foreign policy interests of the U.S. After the Soviet incursion into Afghanistan, for example, President Carter banned certain exports to the Soviet Union.

**Domestic short supply:** The government may wish to prevent excessive drain of scarce materials from the U.S. economy.

The CCL states what goods can be exported to what countries under what conditions. It has divided the world into a number of country categories (see Figure 1 on ID/4).

A company does not need export authorization for commodities and technical data intended for use or consumption in Puerto Rico or any other U.S. possession, territory or dependency. They are



## IN DEPTH/SOFTWARE EXPORTS

considered domestic shipment, but a shipper's export declaration must usually be submitted.

Unless nuclear energy is involved, a firm does not need an export license for commodities or technical data that will be used or consumed in Canada. A shipper's export declaration may be required.

The OEA export control authority extends to:

- Export of commodities and technical data from the U.S.
- Re-export of U.S. origin commodities and technical data from one foreign destination to another.
- Exports and re-exports from a foreign country of foreign products containing U.S. origin parts and commodities.
- Exports and re-exports from a foreign destination of foreign prod-

ucts based on U.S. origin technical data.

**Warning:** An exporter is also liable if the foreign importer re-exports the software to a prohibited country.

#### Exactly what is prohibited?

Federal law prohibits unlicensed export of "technical data" and certain commodities.

"Technical data" is defined by federal regulation: "Information of any kind that can be used or adapted for use in the design, production, manufacture, utilization or construction of an article of material. The data may take a tangible form such as a model, prototype, blueprint or an operating manual; or it may take an intangible form such as technical services."

All software is technical data

since by its very nature, a computer must use software to be utilized. It does not matter if it is a video arcade cartridge or program controlling a nuclear reactor. It may seem strange that all microcomputer software, including a video game like Pac-Man, is included as technical data. The Commerce Department has been asked and has refused to waive any type of microcomputer software from the regulation.

Among the commodities specifically controlled are:

1. All magnetic media, except that made specifically for voice and music recording. This group includes floppy and hard disks and all magnetic tape made especially for computers.
2. Computer-aided design and manufacturing (CAD/CAM) software

usable in the design or manufacture of integrated circuits.

3. Software designed for use with numerically controlled machine tools.

4. Software designed to control or perform the function of cryptographic equipment (code machinery).

If your software involves one of these areas, obtain legal advice in writing before proceeding.

**Warning:** Software is considered two items. You will need two separate licenses to export software stored on a magnetic medium — one for the software and one for the medium.

#### Getting the export license

OEA regulations provide for two main types of export licenses:

**Validated license:** This formal license is issued by the OEA after reviewing the written license application. It permits the exporter to ship a specified commodity to a named consignee in a particular country for a designated use.

**General license:** This license permits export without the exporter having to submit a license application.

A general license is effective immediately upon the exporter's satisfaction of regulatory requirements. A validated license can take up to six months of review. Validated licenses are primarily used for large projects such as plant construction, highly sensitive information, exports to restricted countries and so on.

Most software can be issued under a general license. There are two types: the General Technical Data Available (GTDA) and General Technical Data Restricted (GTDR).

The simpler is the GTDA. It covers all materials that "have been made generally available to the public in any form including: 1) data released orally or visually at open conference, lectures, trade shows or other media open to the public; and 2) publications that may be purchased without restriction at a nominal cost or obtained without cost or are readily available at libraries open to the public."

#### Country group Q

Romania

#### Country group S

Libya

#### Country group T

North, Central, and South America, Bermuda, and the Caribbean, except Canada and Cuba.

#### Country group V

All countries not included elsewhere (except Canada, which is not in any group).

#### Country group W

Hungary

Poland

#### Country group Y

Albania

Bulgaria

Czechoslovakia

Estonia

German Democratic Republic

Laos

Latvia

Lithuania

Mongolian People's Republic

USSR

#### Country group Z

Cuba

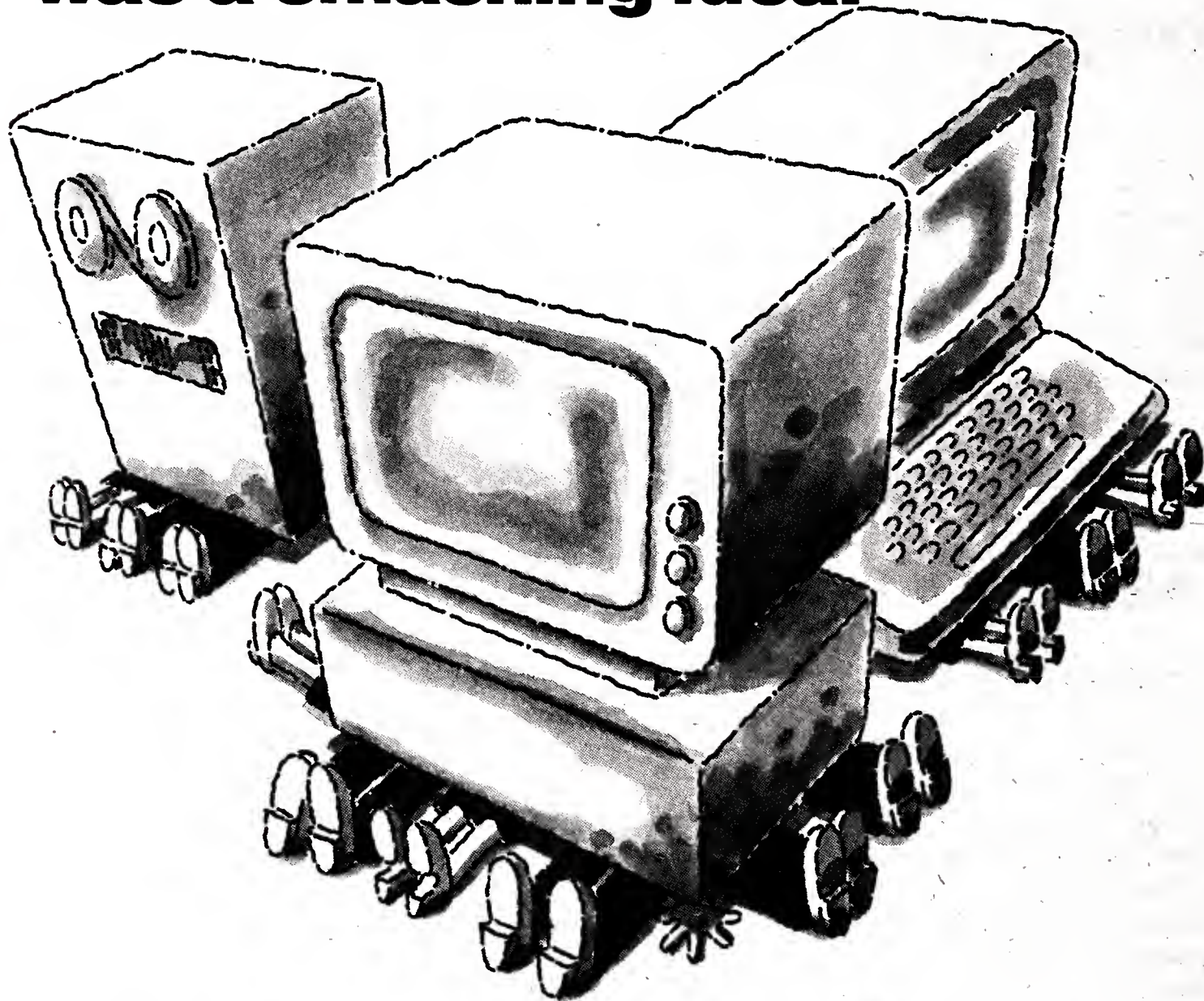
Kampuchea (Cambodia)

North Korea

Vietnam

Export categories

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But we have a solution.

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Give them an advanced battery-powered printer that attaches securely on the computer.

Give them an interactive human interface and operating environment that takes only 15-30 minutes to learn.

And unique field-oriented software that comes in rugged plug-in capsules.

In short, give them the Gavilan™ mobile computer.

### PORTABLE TURNED PRACTICAL.

Never has there been a complete business computer system as sophisticated, yet as light-weight, as the Gavilan.

Self-contained, rechargeable 8-hour batteries free the user from external power constraints.

The 8 line X 80 character screen eliminates the need for an external monitor, although you can add one if you wish.

The full-size typewriter keyboard makes data entry as convenient as it is in desktop systems.

A built-in 3½" microfloppy disk drive and modem provide the capabilities of data handling and transmission where they never before existed.

And a 50 character per second printer gives the mobile professional in the field the immediacy of hard copy text, forms, charts, spreadsheets and graphics.



All in a compact 14 pound mobile office.

### WE BUILT A MORE MOBILE MOUSE.

The success of any computer depends in part on the "friendliness" and accessibility of the user interface.

Especially in the field.

A standard mouse interface is fine for the expanse of a desktop, but not for work on the move.

So with the Gavilan, we incorporated a built-in touch panel: the first fully integrated computer mouse.

It's a pressure-sensitive pad just above the keyboard. Finger movements across the touch panel control the on-screen movements of a cursor.

But like a mouse, the Gavilan touch panel actually executes virtually all of the user commands, saving the keyboard for typing only.

Through the touch panel,

users store and retrieve data. Cut and paste. Move documents. Scroll through pages of information. Zoom out for a complete look at the format of a document. Or even ask the computer what just happened and what to do next. With one finger.

### SOFTWARE IN A CAPSULE.

The intuitive ease of talking to the computer through the touch panel is made possible by the unique Gavilan operating environment and software packages.

The applications packages come in durable capsules called CapsuleWare™. They plug directly into the body of the computer, adding no additional volume. The operating software, (GO System™) then lets each of the applications communicate with each other through a common interface and a sharing of data.

The result is a completely integrated information environment that lets the user combine spreadsheets, graphics and word processing text together.

All in the same uninterrupted user mode.

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The Gavilan mobile computer and its CapsuleWare programs are creating vertical market demands—both in MS/DOS and the Gavilan operating environment—for software packages completely unrealized one short year ago.

That means new opportunities in applications development far beyond the typical office-bound programs. From air and sea navigation to banking services. Journalism to field auditing. Anthropology to insurance.

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## IN DEPTH/SOFTWARE EXPORTS

The term "nominal cost" is also defined: "realistically only the cost of preparing and distributing the publication and not the intrinsic value of the technical data. If the cost is such as to prevent the technical data from being generally available to the public, the . . . [GTDA] would not be applicable."

A safe bet would be that only public domain software could be exported under the GTDA. Software that the

seller purports to license only would not be included. Software that qualifies for the GTDA may be exported to any country.

If the software does not qualify for GTDA, then the more restrictive GTDR applies. To use a GTDR, the exporter must receive a written letter of assurance from the foreign importer and/or distributor that the software will not be re-exported to another country. This assur-

ance should be on the importer's letterhead and state that neither the technical data nor its direct product will be shipped either directly or indirectly to any country listed in Groups Q, S, W, Y, Z or Afghanistan.

Regardless of the importer statements, an exporter has a duty not to export if it has reason to believe the software would be re-exported. The more sensitive the software that is involved, the

more diligence required.

**Warning:** All technical data, even that which qualifies for a GTDA, exported to Libya, Cuba, Vietnam and Kampuchea and most technical data exported to country groups Q, W, Y and Afghanistan, requires a validated license.

If an exporter is sending magnetic media to country groups T, V and Canada, he only needs to obtain a validated license if the shipment

is worth more than \$1,000. For values less than \$1,000, he may mark the package "GLV" (General Limited Value).

#### Export declaration

Besides the export license, the exporter must file a shipper's export declaration (SED) at the place of export (or with the postmaster, if mailed) if the value is more than \$500. The declaration must contain the official symbol for the license used, descriptive information on the type of goods being shipped and the Commodity Control Number if the goods are on the CCL.

**Warning:** Even though the declaration is only required when the value is more than \$500, there is a question whether it applies to the value of blank media or the value of the recorded software. As discretion is the better side of valor, file a declaration whenever the value of the licensed software exceeds \$500.

If a shipment is exported without the proper license or later diverted to a nonapproved destination, severe penalties can be applied. Civil penalties of up to \$10,000 may be imposed administratively (that is, without a trial, judge or jury) for each violation, along with prohibiting either the U.S. or foreign party from exporting any goods from the U.S. for a specified time. Future licensing can be conditioned upon 1) payment of the fine or 2) posting a bond to cover the fine while the exporter litigates it.

Criminal penalties for knowingly violating the act can range up to five years in jail and a \$50,000 fine (or five times the value of the goods, whichever is greater).

If technical data or restricted commodities are exported to countries in groups Q, S, W, Y, Z or Afghanistan, and they have military or cryptographic capabilities (I have seen commercial micro software which I feel would apply), the exporter can go to jail for 10 years and be fined up to \$1 million.

Filing a false declaration also violates the False Statement Act. Such a violation is criminally punishable by a fine of up to \$10,000 and imprisonment of up to five years.

Finally, any commodity and technical data shipped in violation of the EAA can be seized and declared forfeited. The government can auction the confiscated material to the highest bidder.

#### Anti-boycott legislation

Historically, the U.S. opposes restrictive trade practices or boycotts imposed by one foreign country against other countries considered friendly to the U.S.

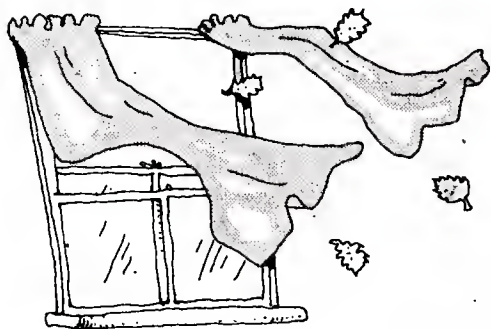
The EAA codifies this opposition. U.S. corporations

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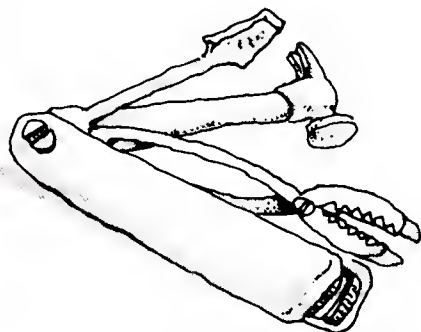
"Makes CICS debugging a breeze."

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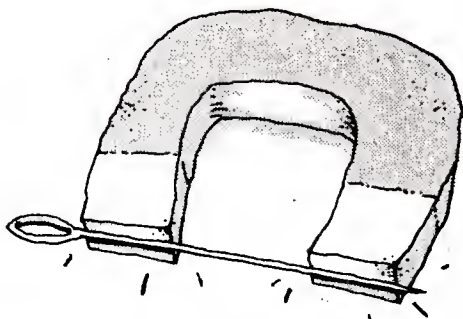
"It provides an invaluable diagnostic capability."

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## IN DEPTH/SOFTWARE EXPORTS

dealing in foreign trade have an obligation to comply with the law and report the boycott request to the Commerce Department. The law specifically prohibits U.S. citizens or corporations from:

- Refusing to do business with any blacklisted firm or boycotted country that is deemed friendly to the U.S.

- Discriminating against any U.S. citizen on the basis of race, religion, sex or na-

It is very possible that once the license expires, the licensee may have an unrestricted world use to market the product.

Example: Assume you license a Mexican licensor to produce a Spanish version of Mathcalc. At the end of 10 years, the Mexican licensor could lawfully sell the program worldwide under the Mathcalc name. The fact that the version sold is not the current version will do you,

the owner, more harm than the former Mexican licensee.

To find the names of foreign attorneys, contact either the American embassy in that country or the country's embassy in Washington, D.C. You can also find many names in the *Martindale Hubble Law Directory*, a multivolume set published each year. It lists every American attorney and many foreign attorneys and can be found in most law libraries

or court houses.

**Warning:** In the nondemocratic countries, justice is often arbitrary. Getting contract enforcement against a prominent official (or a relative) can be an exercise in futility. Delays of five to 10 years are not uncommon.

#### Import Duties

Import duties differ from country to country. You can obtain current information from the country's embassy

or consulate. Find out how software is classified in that country. Find out if the duty is levied on the actual selling price, manufacturing cost or replacement value.

Consider setting up "software libraries" abroad where your software can be duplicated. For example, setting up such a library in the European Economic Community can save considerable import duties in all the EEC countries.

*Before signing any contract with a business located in a foreign country (including Canada), an exporter should seek competent advice from an attorney in that country.*

tional origin in order to comply with a foreign boycott.

- Furnishing information about their business relationship with boycotted countries or blacklisted companies.

Violation of the boycott provisions brings civil penalties of up to \$10,000 per violation and suspension of export privileges. Criminal penalties include fines of up to \$50,000 and imprisonment.

#### Need for local counsel

Before signing any contract with a business located in a foreign country (including Canada), an exporter should seek competent advice from an attorney in that country. What may be a general rule of business in the U.S. can violate the law elsewhere. Do not let your American counsel convince you that it can provide worldwide legal advice.

Example: In 1982, Mexico amended its Law on the Control and Regulation of the Transfer of Technology and the Use and Exploitation of Patents and Trademarks to include software specifically. Any license agreement not registered with the state is unenforceable and the parties are subject to a large fine. Among the reasons provided by the law for refusing to accept registrations are:

1. Excessive royalties (more than 3% to 4% of the net sales).
2. Any clause requiring return of the knowledge at the end of the license and cessation of use of the technology.
3. Excessive term — any clause that requires the licensee to maintain confidentiality after the expiration of the agreement violates this prohibition.
4. Any clause prohibiting the Mexican licensee from exporting its product.
5. Any clause subjecting the contract to non-Mexican law or a non-Mexican court.



## MULTIPLE CHOICE: The UDS Modem Family

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	MODEL	PRICE	MODEL	PRICE	MODEL	PRICE
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0-1800			202T	\$425		
1200/300	212A* 212A/D	\$595 \$645			212 LP**	\$445
2400	201C*	\$775	201B	\$695		
4800	208A/B*	\$1750	208A/B	\$1750		
9600	9600A/B*	\$2650	9600 9600A/B	\$2650 \$2650		

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UDS modems are offered nationally by leading distributors. Call the nearest UDS office for distributor listings in your area.  
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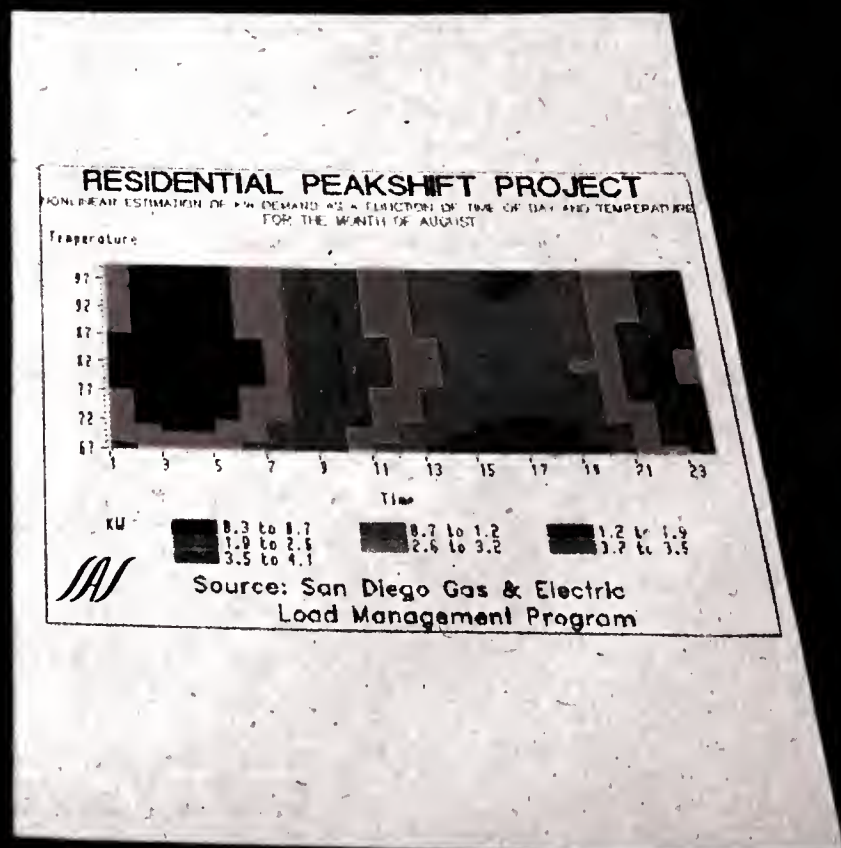
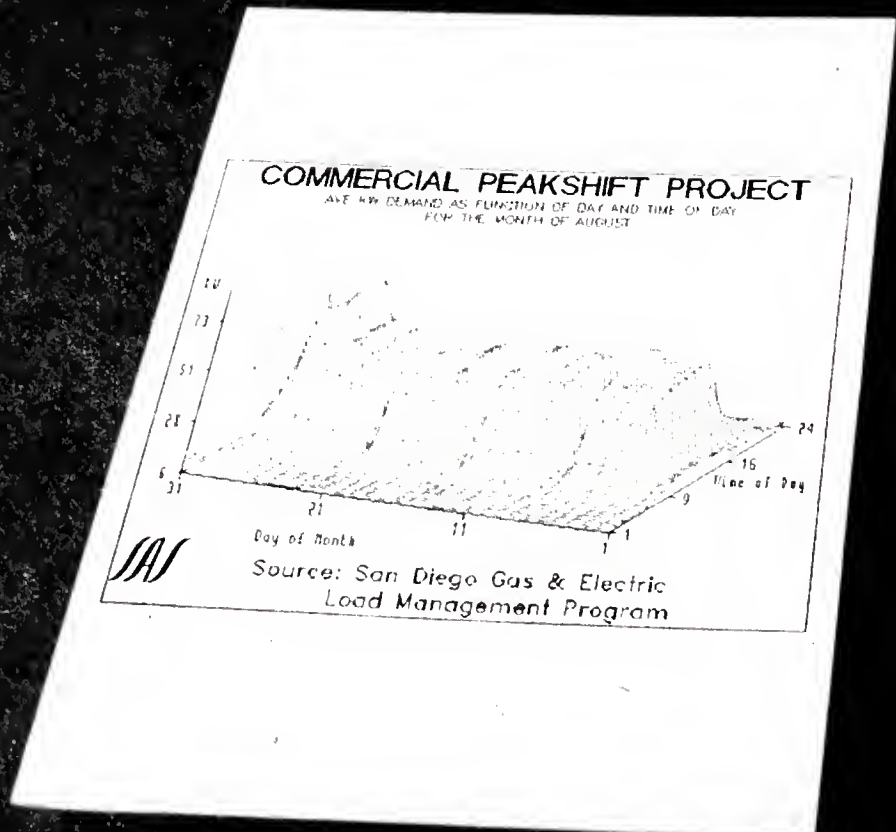
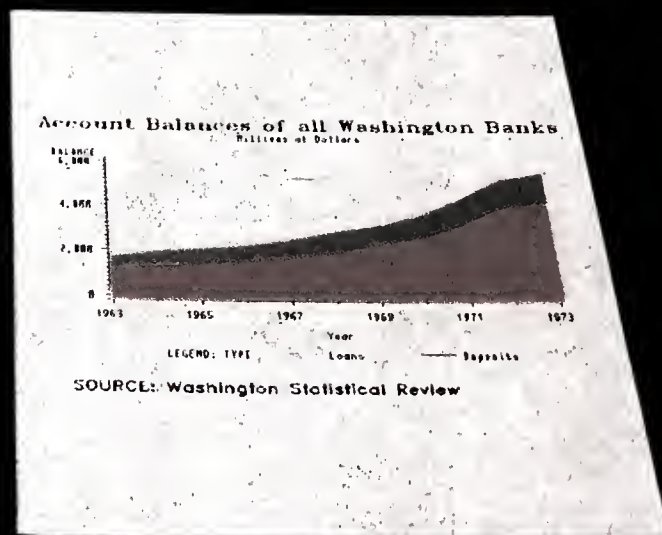
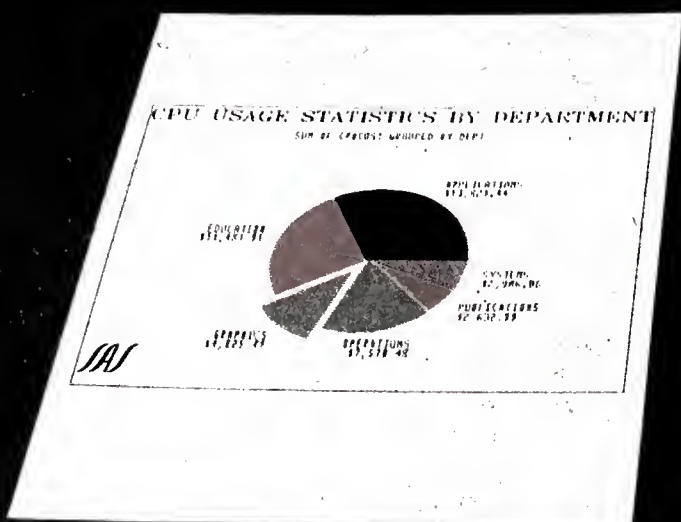
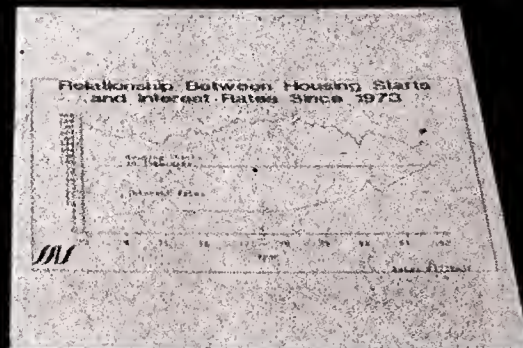
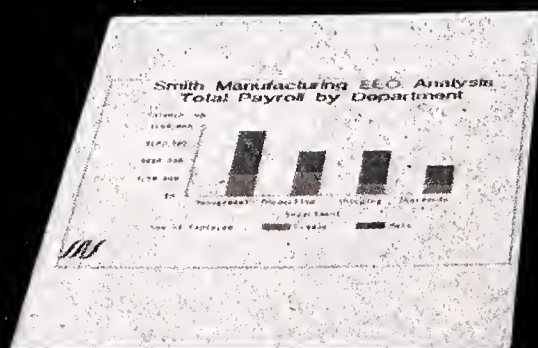
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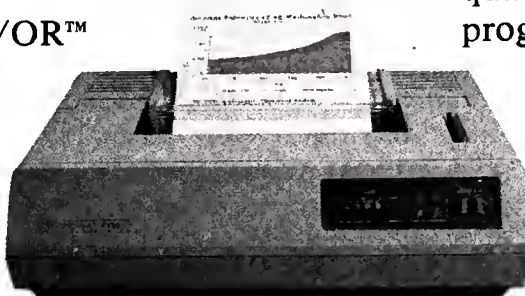
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## IN DEPTH/SOFTWARE EXPORTS

## The long arm of the law

The far-reaching effect of the anti-boycott legislation is shown by the unusual experience of Rep. Stewart McKinney [R-Conn.]. The Commerce Department recently accused McKinney of supplying information to the government of Kuwait in violation of the EAA. The anti-boycott portion of that act prohibits U.S. citizens from aiding the Arab boycott of businesses linked to Israel. Specifically, it bars any communication

about the boycott.

McKinney wrote a letter on behalf of Connecticut-based Perkin-Elmer Corp., which had sought his aid in trying to clear up a problem of miscommunication. Perkin-Elmer, apparently, was losing Kuwaiti business because a subsidiary had the same name as a different company in Greece that had ties to Israel.

McKinney claims a Commerce official approved his letter.

**Warning:** A lot depends on the custom agent who examines the imported goods. It is not unusual for one agent to levy a duty based on one

valuation and another agent to levy another duty.

Example: Via mail, you exported two identical software packages to

Australia. The first package is taxed at the value of the software (for example, 200 copies at \$200), while the second is taxed at the value of the diskette (200 copies at \$4).

Most exporters will find it advisable to hire a customs broker. For a fee, the broker will handle the paperwork and make any other arrangements for custom clearances.

**Warning:** To avoid financial surprises, require any foreign licensor to bear the cost of any import duties as well as local taxes. (Be warned that some countries state such obligation clauses unenforceable.)

### Other considerations

Many countries restrict exportation of profits. These restrictions generally fall into two main types: currency control and restrictions on

technology license.

Earning a large royalty income does no good if you cannot remove the income from the country. What good is earning 10,000 Polish zlotys if you cannot exchange the money for another currency and you cannot export the zlotys out of Poland?

Many countries (including Western ones such as France, Italy and Japan) have at one time or another imposed currency controls. Give some consideration as to what you will do if the foreign country restricts your rights to export profits. Is there some other purpose to which you can put the income (perhaps use the money to buy local goods to import into the U.S.)?

You may also find that there are dual levels of exchange ("official" and the "free market") or that the government requires advance notice to export the money.

**Restrictions on technological licensing:** Most countries either restrict the amount of technology royalty payments (8% — 10% maximum) or require the royalty arrangement to be registered with the government (Spain and Portugal, for example).

Failure to register means no royalty income can be exported.

You can get around these requirements by either requiring payment in full before shipment or requiring royalty payment be by an irrevocable letter of credit issued through an American bank.

Price Waterhouse & Co. and Ernst & Whinney, both large accounting firms, publish annual surveys of foreign exchange information.

### Devaluation, revaluation

Protect yourself contractually against currency devaluation (instead of U.S. \$2 = £1.00, U.S. \$1 = £1.00) or revaluation (instead of U.S. \$2 = £1.00, U.S. \$4 = £1.00). Failure to do so can cause havoc when the change in valuation occurs.

Example: On Dec. 1, 1983, U.S. \$2 = £1.00. You agree to accept a royalty payment of £10 per copy (U.S. \$20). Six months later, Britain devalues its currency and U.S. \$1 = £1.00. Your royalty payment is now equal to U.S. \$10.

You can get around this problem by making adjustments in the royalty in the event of a change in valuation or by stating the royalty shall be paid in a stable currency (for example, the U.S. dollar or Swiss franc).

### Setting up distributorship

Many countries, especially in South America, have enacted contract termination statutes that unilaterally penalize a foreign principal/licensor from terminating the business relationship without incurring a severe penalty. They assume the local agent has a proprietary interest in the local market it developed and the good will it established in the product.

Unless the relationship is terminated for good cause, the agent is entitled to monetary compensation for his interest. The general characteristics of these laws are as follows:

1. Restrict termination for anything but "just cause." Some statutes define what "just cause" consists of.
2. Prohibit any contract language from waiving the compensation and other rights granted the agent by statute.
3. Prohibit the contract from stating which country's law shall apply.



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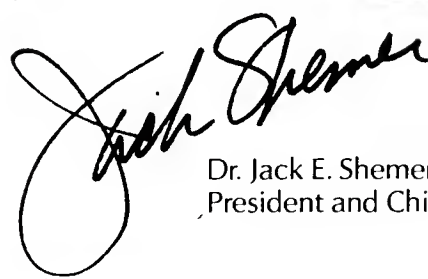
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## IN DEPTH/SOFTWARE EXPORTS

4. Require that the agent be given sufficient advance notice of termination.

5. Allow the agent to contest the termination by submitting the controversy to arbitration.

6. Allowing the agent to continue the relationship beyond the termination date built into the agreement.

#### Sources of information

Always know with whom you are dealing. The U.S. Foreign Service maintains a World Trader's Data Report (WTDR). This trade profile, which contains detailed information on individual foreign firms, is available from the U.S. Department of Commerce, Office of Export Marketing Assistance, Room 1033, Washington, D.C. 20230. You must provide the firm's complete name and ad-

dress (preferably on Form ITA-431, obtainable from the above address). There is a charge of \$75 for each WTDR ordered.

Typical information includes type of organization, number of employees, method of operation, general reputation in trade and financial circles and names of the firm's trading connections.

The Office of Trade Information Services (Otis) publishes lists on selected countries and industries for the purpose of assisting U.S. exporters.

The lists contain the names, addresses and other business information about foreign trade agents, distributors, manufacturers, retailers and so on. Lists include telecommunications equipment, electronic components and computers and peripher-

als. Current information and prices for each list may be obtained from the U.S. Department of Commerce, Office of Trade Information Services, P.O. Box 14207, Washington, D.C. 20044.

Many foreign countries (for example, Japan, Mexico, Portugal and Spain) require the registration and approval of licensing agreements. Some countries can require changes in the substance of the agreement.

Unless a double taxation treaty eliminates the requirement, all countries will require a local licensee to withhold tax on any royalty payment made to a noncitizen. This tax can be as high as 50%. You also owe U.S. income tax on the royalty. With a double taxation treaty, you are allowed to take a credit on your American taxes in the amount of the

foreign taxes paid, thus avoiding double taxation. Do not be surprised if a large percentage is withheld by the licensor as payment on local taxes. If your licensor does withhold taxes, get contractual requirements that it provide evidence that it paid the tax.

#### Protection of ideas

American patents and trademarks have no legality outside of the U.S.

Example: The European Patent Convention, Article 52.2.c, specifically excludes "schemes, rules and methods for performing mental acts . . . and programs for computers" from patentability.

The problem is even more confusing with trademarks. The U.S. is a party to a number of trademark treaties. Under them, an American trademark owner has a set length of time (usually one year or less) to secure priority of the trademark in a foreign country.

Failure to register and secure your right within the priority period means the first person to apply and secure registration becomes the lawful owner.

**Warning:** In some countries (for example, France), the first applicant is entitled to register and protect the mark. If you later decide to market your program in that market, you will find yourself being "blackmailed" to doing business on the owner's terms or picking a new trademark for that market.

#### Copyright protection

The U.S. has ratified the 1952 and 1971 Universal Copyright Conventions.

Each signatory agrees that it shall give the same protection to works of foreigners as their own citizens provided that since first publication, each copy of the copyrighted material contains the copyright "©" symbol along with the name of the copyright owner and the year of first publication.

**Warning:** Notwithstanding the Universal Copyright Convention, each country can determine what is copyrightable. Recent court decisions have upheld software copyrightability in the Federal Republic of Germany, while denying it in Australia.

As of 1982, only Bulgaria explicitly stated computer programs were copyrightable. In the rest of the world, the question is still open.

Always clearly state the life of the agreement (between one and five years is reasonable), under what circumstances it can be terminated early (for example, by bankruptcy of the licensee) and the rights of each party at agreement's end.

Finally, when dealing with a non-English speaking country, provide that the English version of the contract will control over the non-English version.

#### About the author

L.J. Kutten, an attorney living in La Jolla, Calif., is a member of the Missouri and Illinois bars.

A specialist in nonpatent computer law, he wrote Computer Buyer's Protection Guide, published by Prentice-Hall, Inc.

Kutten is currently working on a book called The Law and Software, to be published by Prentice-Hall next fall. The book will also cover the subject of software exports.



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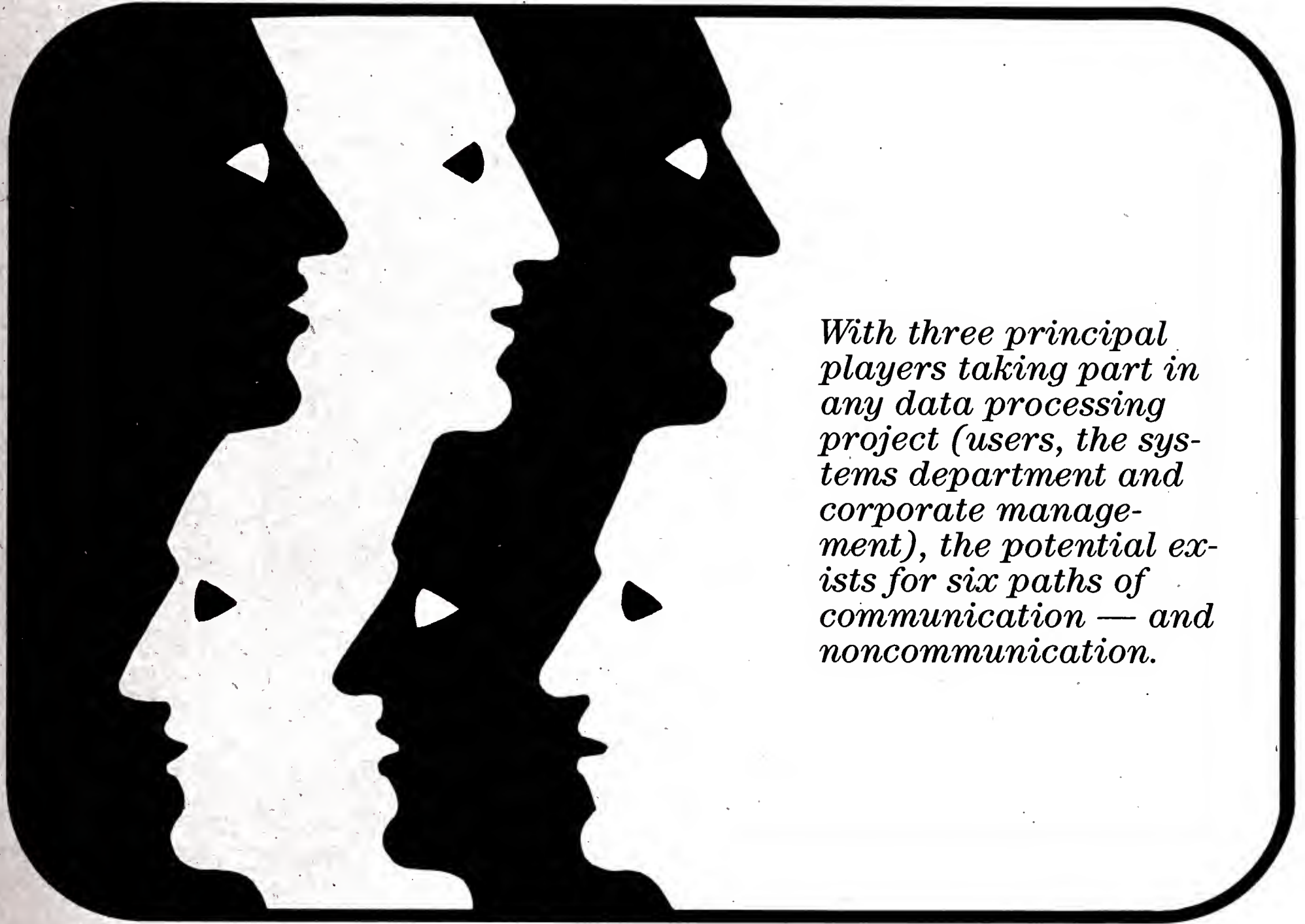
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# IN DEPTH



*With three principal players taking part in any data processing project (users, the systems department and corporate management), the potential exists for six paths of communication — and noncommunication.*

## Static communication

**By Michael Martin**

The breakdown in communication during any data processing project can be traced to one or more of the three principal players: users who are asking for a particular system or service to be delivered; the systems department (either internal or external) that is charged with providing this new system or service; and the company management group that guides and approves the development/implementation of the system or service.

Between any of the three players — user, systems department and management — there are six possible directional paths for communication. Often, some of these communication paths do not exist at all; some that do exist are inadequate.

Progress toward reducing the communication problem has not kept pace with the dramatic improvements in data processing technology. The problems encountered in the mid-1960s were excused with such justifications as:

“Well, it’s a new technology.”

“There aren’t many people out there,

especially on the users’ side, who understand what makes this all go.”

“The vocabulary isn’t intended for non-DP professionals.”

### **Yesterday’s problems today**

Over time, some of the vocabulary and technology have become more comprehensible by more users — consider the proliferation of the buzzword “user-friendly,” for instance. But the problems in communication have not gone away. There are still large numbers of projects that fall far short of original expectations, are seriously delayed or are abandoned altogether because of bad communication.

Sound transmitted over a long distance loses the quality and strength of its signal. The same is true of the communication process. If you go too long without reinforcing the signal, the message becomes misunderstood and eventually lost.

In a successful communication, the sender and the receiver frequently reverse roles, a bidirectional process. One classic, recurring problem between users and DPs is that one party tends to

---

*DP projects often fall short of expectations or are delayed and even abandoned because of miscommunication or noncommunication. To clear up such problems, any organization can develop a long-range DP plan, create a corporate systems steering committee and proactively educate users, DP and management.*

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## IN DEPTH/STATIC COMMUNICATION

dictate to rather than communicate with the other.

In the systems development process, the use of formal methodologies often goes a long way in correcting some of the problems associated with the communication process. The most successful systems development methodologies share a number of common characteristics: They prescribe an iterative approach; they involve representatives from all partici-

pating groups and define their roles; they build on intermediate products and decisions; they establish standards for documentation; and they strongly encourage project management. In short, they all facilitate communication.

A word of caution: If a methodology is not understood or followed, the project may fail. One company adopted a nationally known systems development meth-

odology that the users did not understand but the DP people believed they did. During development, the DP department prepared massive amounts of highly technical documentation based on the methodology. The documentation was presented to the users for review and correction and ultimately for approval.

Without user approval, the DP department could not proceed with the develop-

ment according to the methodology, and the users would not get their system. Thus, the users were confronted with an interesting dilemma: approve something they could not understand and take a chance the outcome would be satisfactory (a 50% chance of failure) or not approve the documentation and stop the project (a certain failure).

One can imagine the decision they made and the even-

tual results. The DP department played by the rules, obtained user sign-offs and proceeded. Later, the department was surprised and angry when the delivered product was judged inadequate.

Each systems development methodology step refines the products of prior steps until the user ends up with the desired working system. It is crucial to the eventual success of the project that the steps in the systems development methodology produce tangible products, such as formal documentation. While written documentation is not fool-proof, it has a better chance of limiting miscommunication than does verbal communication.

What we are talking about here is not only applicable to DP but to any group that must communicate with another group within an organization. In a manufacturing environment, for instance, there is the complaint that the sales force is out selling things that have not yet been designed and priced.

Commitments relative to size, style and delivery dates are made, but manufacturing is not taken into account until it is too late. Often, antagonism develops between the departments, which can result in a dissatisfied customer and a lost sale.

#### Drawbacks to process

There are drawbacks to the documentation process. Earlier, the example of the documentation that was too technical in nature to be understood by the users was noted. Another documentation problem occurs when the documentation is written by a select few. If the users produce it all, problems will arise with the DP people; if the DP people produce it all, the users will have significant problems in utilizing what has been created.

Another impediment to communication is the "language barrier." For years it has been taken for granted that each area within an organization has its own vocabulary and buzzwords. DP is no exception. Often the use of such specialized terminology finds its way into the documentation process. Using a systems development process with a number of product-oriented steps, those having to sign off on documentation have more

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IN DEPTH/STATIC COMMUNICATION

opportunities to identify potential problems and ask for clarifications.

This type of communication reinforcement can be termed "creeping commitment." Here, a project team goes along and commits to what has been developed and documented to date. The project then goes a little further along, and a new commitment is made; it goes a little further and is approved again by the team. In this way, everyone involved knows exactly where the project stands and what is to be accomplished next.

The outcome at the end of this process should not be a surprise for anyone because he has participated in every logical component as it developed.

ABC and OEM

To punctuate the horrors that could arise from developing a product by this latter method, an example is appropriate. A certain company (ABC, Inc.) wished to have a computer system installed that would provide users and management with necessary data to improve its business operations. It contracted with an OEM firm (OEM, Inc.) to provide the computer system. ABC decided to show OEM a computer system that operated the way it wanted its system to operate and took OEM to visit a company that had such a system.

This system, according to ABC, would meet its needs. The comment by ABC to OEM was, "We want a system like that." ABC management then took OEM personnel around its own facility, notes were taken, and OEM went away to develop the desired computer system.

Several months later, OEM delivered a computer system that ABC would not accept. ABC's comment was: "That's not what we wanted." OEM's reply: "But that's what you showed us." After some lengthy negotiations, OEM reconfigured the system. Again, ABC management was not totally satisfied with the final product. Since OEM felt it had gone above and beyond its obligations, it termed the contract "fulfilled."

The outcome was an inefficient end product just sitting around on ABC's premises, a waste of effort on OEM's part, a waste of money on ABC's part and lawsuits for claims and damages initiated by both sides.

Clearing up communication

There are three significant steps that any organization can take to clear up its existing and potential communication problems involving DP. The first is the development of an overall, long-range DP plan. Once developed, the plan needs to be distributed widely in the organization so that people will know what will happen, in what sequence and in what time frame. These plans need to be maintained continuously and regularly.

Along with the creation of the plan, an organization needs to have some type of corporate systems steering committee composed of the heads of the key user departments, the data processing group and senior organization managers. The committee is charged with the responsibility for a number of issues, such as establishing priorities, approving major expenditures, setting key policies and approving the allocation of resources. The committee should meet

*Several months later, OEM delivered a computer system that ABC would not accept. ABC's comment was: "That's not what we wanted." OEM's reply: "But that's what you showed us." After some lengthy negotiations, OEM reconfigured the system. Again, ABC management was not totally satisfied with the final product. Since OEM felt it had gone above and beyond its obligations, it termed its contract with ABC "fulfilled."*

frequently and report its activities to the organization. When an important project is initiated, the work plan should include key output and decision points for committee review.

Recently, one major corporation added a new wrinkle to the commit-

tee system and has been quite successful in its approach. When a major new project is started, especially one that crosses several organizational lines, the project manager is selected by the steering group. In turn, the project manager reports

back to the steering committee on a regular basis.

Since everyone on the steering committee represents a user area within the corporation, no user is ever surprised when changes are introduced or modifications made to the developing system.

The final major factor in clearing up communication problems is through a proactive type of educational process directed at users, DPs and management, primarily the first two.

Too often, there is a divergence in the underlying objectives between users and DPs. On the one hand, the users are trying very hard to get something that will help them perform better. Their instincts tell them to get the best possible product in a reasonable time frame.



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## IN DEPTH/STATIC COMMUNICATION

Given their preferred sequence, users are looking for product quality first and timing second.

DP, on the other hand, seems to have an almost infinite backlog of requests for work. While the department is not uninterested in quality, its instinct is to produce the best product possible within the time constraint placed upon it.

Therein lies the rub. Every time DP goes and talks to users, it is presented with a problem or a change or new demands. From the DPer's perspective, agreeing to the users' requests can create more work and upset the project's time schedule.

Of course, the user is merely making the system more useful and accurate. Given that the objectives of the two groups seem to be in conflict

*Therein lies the rub. Every time someone from the data processing department goes and talks to users, he is presented with a problem or a change or new demands. From the DPer's perspective, agreeing to the users' requests can create more work and upset the project's time schedule. Of course, the user is merely making the system more useful and accurate. Given that the objectives of the two groups seem to be in conflict here, DP may avoid talking to users unless it is absolutely necessary.*

here, DP may avoid talking to users unless it is absolutely necessary.

An effective educational process will reinforce DP's role as a service function within the organization.

Without users, the department has

no reason to exist. It must learn more about the "business" of the business. And above all, it must improve its "people" skills, such as listening.

For their part, users must be made to understand what systems develop-

ment is all about since most users tend to find the cycle confusing or incomprehensible. They should know more about the methodology and terminology used in the development process since they will increasingly play key roles during development. Finally, users must understand the consequences their demands place on DPers.

Users should come to realize that every modification to a developing system can affect the entire project. A knowledge of the consequences of a change permits a realistic appraisal of its value based on budget and calendar consequences.

#### Educating management

The management group also must be educated so that it understands exactly what is expected of it. Information is a corporate asset. Managers should control this asset as they would any other that affects the fortunes or failures of the corporation. In the hands of the wrong people or misused, information could inhibit the corporation's ability to be competitive and prosper. In the hands of the right people, this very same commodity could give the corporation the competitive edge it needs to excel.

It then becomes necessary to educate the management group. Management must be shown that its role is not one of a passive bystander in the process of systems development; its function is not merely to sign checks as the development process takes place. Rather, the prioritization process and approval process is a function that management must be made to understand and exercise.

Too often, management either abdicates its responsibilities to the users (the end product is intended for them) or to the DP department (which possesses the technical expertise). This attitude can only be changed through a strong education process.

Above all, education must be constantly reinforced. New players come in; old members are reassigned, promoted or retire; technology changes.

#### Solutions not spontaneous

Although communication problems and horror stories abound, organizations do not have to settle for that kind of an outcome. It is not preordained that the communication problems outlined above await every new systems development project. The organizations that tend to be the best at resolving communication problems work at the problem constantly — the solutions are rarely spontaneous.

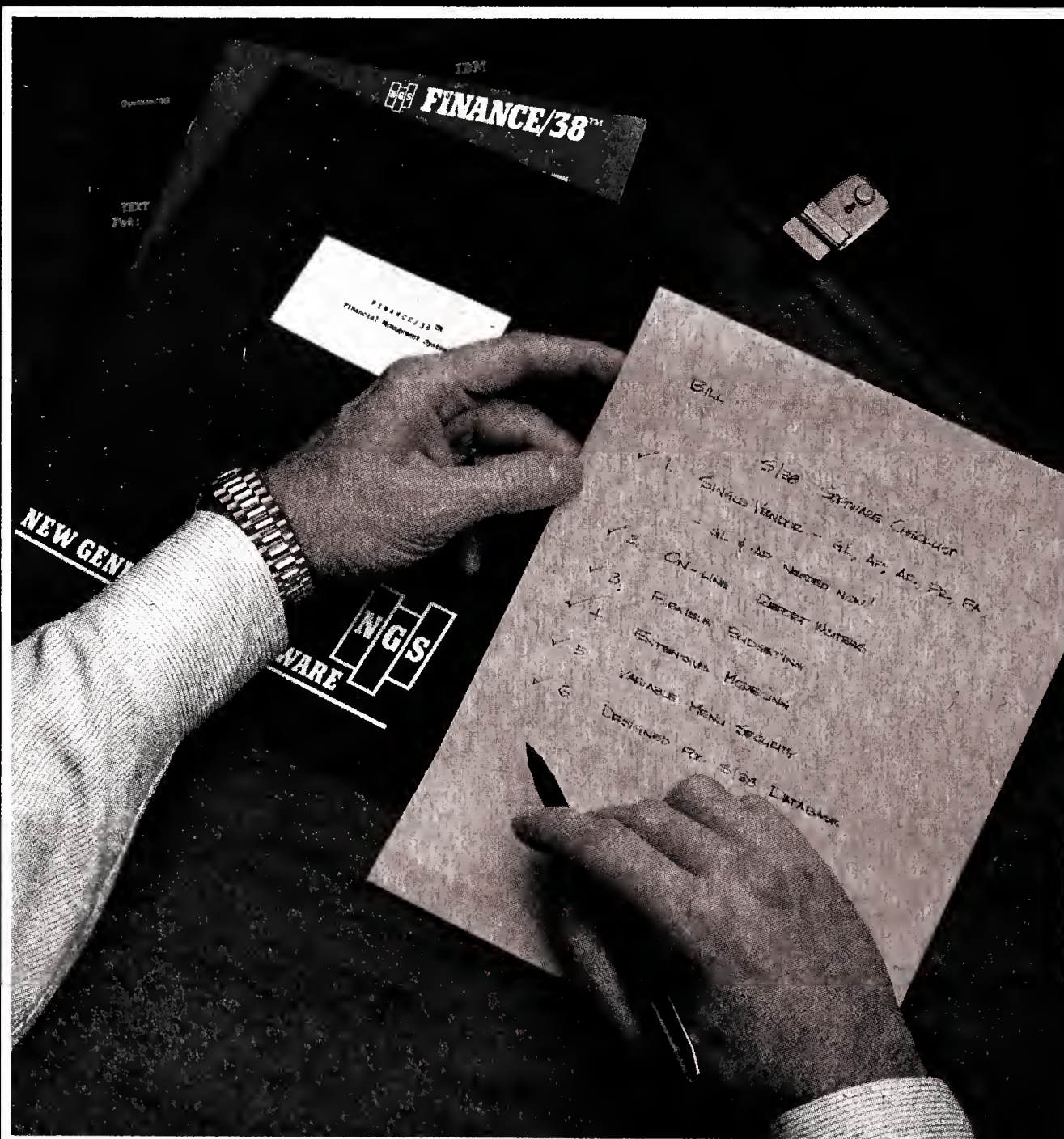
Such organizations recognize that a problem exists and go after it. They set into motion a proper organizational plan and education process, institute a proven methodology, appoint appropriate steering committees and bring on board people who understand that they cannot be passive in the communication process.

When all of these factors are blended together, the problems of systems development and communication may not go away entirely, but they can be controlled.

#### About the author

Michael Martin is a consulting partner and director of management consulting operations for the Connecticut offices of Touche Ross & Co. in Stamford.

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# SYSTEMS & PERIPHERALS



**HARD TALK**  
Tom Henkel  
CW Senior Editor

## IBM tars dead-end road with X line

By replacing its 3080 series of mainframes with newer X models, IBM has steered current users of 3080 series processors onto a dead-end street. The older 3080 series processors are not field-upgradable to the newer line of processors because the X models incorporate different design and circuit packaging technologies.

The only way users of the older 3083 systems can upgrade to the newer models is to buy a whole new processor. While 3080 series users still have the option of upgrading to larger, older machines, IBM's move appears to be a reversal of the marketing tactic developed with the first of the 3080 series processors back in 1981.

When the first member of the 3080 series, the 3081 Model K, was announced, IBM appeared intent on offering a line of processors that were field-upgradable to larger models. At the time, many speculated IBM mainframe users would never have to buy additional new processors. They would simply add boards or other components to build bigger systems.

For a while, this building block architecture theory held true. When the 3083 was announced, it was field-upgradable to the 3081, and the 3081 was field-upgradable to the top-of-the-line 3084.

Now the building block architecture theory has come crashing to the ground. For owners of the old class of 3080 series processors, the end of the migration path is clearly in view. Granted, IBM cut the price on model-to-model upgrades for users of the older 3080 series processors, but is a 7% to 10% price break an adequate pacifier for being cast out of the mainstream of IBM's current big systems lineup?

See IBM page 72

## Westinghouse awards grant to accelerate optical DP

By James Connolly  
CW Staff

PITTSBURGH — Hoping to help raise the technology from its "infancy," Westinghouse Electric Corp. has awarded Carnegie-Mellon University a \$1 million grant to establish an optical data processing center here.

"Optical processing is in its infancy, but we felt we could help to accelerate the program," said Dr. John Hulm, acting general manager of the Westinghouse Research and Development Center.

The three-year grant, approximately two-thirds of which will be used for operating expenses and one-third for equipment, is intended to spur research into various types of light-based processing.

### Photons replacing electrons

"We are going to try to use photons rather than electrons. I think there is potential for doing a great deal with photons," Hulm reported.

Hulm said optical data processing could be an element in or an offshoot to the U.S. government's *Star Wars* space defense program. He noted that systems such as sophisticated radar units, laser equipment and robots could utilize the high-speed processing that may be available through optical data processing. He said that optical processing could facilitate faster array, analog and parallel processors. He added those machines might work on the same principles as the human eye or brain.

However, he added, "I think it will take at least a decade to get this sort of thing going." He said a breakthrough could be digital processing at an optical level or development of optical amplifiers and optical transistors.

He reported that some current spectrum analysis equipment uses technology that borders on optical data processing, but that there may never be true optical data processing.

"What we are beginning to look at is the possibility of optical chip sets, which combine micro circuits with optical processors. We may end up using a lot of hybrid devices," he said.

The value of optical processing, according to Hulm, rests in the ability to construct complex yet small processors that, unlike current circuits, generate little heat.

Under the grant, which can be extended by the company beyond three years, Westinghouse is paying to modernize and expand laboratories at the university and will provide equipment to the school.

The optical data processing center will be headed by Dr. David Casasent, George Westinghouse professor of electrical and computer engineering at Carnegie-Mellon.

Hulm reported that Westinghouse wanted to support the local university, spur technological developments and build a pool of optical processing researchers who may be available for future employment at Westinghouse.

## Firm speeds operations with printer

NEW YORK — A laser printer is helping a commodities trading firm here remain competitive.

The New York office of Gill & Duffus is heavily involved in commodities trading, a business that hinges on timely information, which in turn calls for a fast, accurate way to perform accounting and billing functions.

Each day after the market closes, a five-person information systems staff is re-

sponsible for documenting trades, updating accounts, preparing contracts and invoicing customers. The staff also handles month-end closing and DP for several Gill & Duffus companies. The firm was leasing an IBM System/38 for accounting and some "back-office" functions.

A decision was made to automate many of the back-office operations associated with trading in May 1983. William

See PRINTER page 72

## INSIDE

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# Two graphics boards debut for 3270-PC users

RYE BROOK, N.Y. — IBM last week announced two optional business graphics boards which allow users of the firm's 3270 Personal Computer to create bar charts and pie charts using both microcomputer and mainframe data.

Announced last October, the 3270-PC gives users local microprocessing capabilities plus the ability to run programs simultaneously on an attached IBM mainframe processor operating under the VM/CMS operating system. One of the main features of the 3270-PC is a multiple windowing capability that allows users to run host and microcomputer applications concurrently and to share mainframe data with microcomputer applications.

The graphics capabilities an-

nounced last week consist of two circuit boards. One is located in a mainframe processor, the other is located in the 3270-PC.

### Host interactive board

The Host Interactive Business Graphics board attaches to any IBM mainframe capable of running 370-era systems software. The unit allows users of 3270-PC Models 2, 4 and 6 to create eight-color graphics from host-generated data. To make use of the feature, the 3270-PC must be in a distributed-function terminal mode, and the host processor must be using IBM's Graphical Data Display Manager program product, according to IBM.

While the 3270-PC allows users to run up to four concurrent host pro-

grams, only one of those programs can be a graphics session. Further, a programmed symbols adapter card installed in the 3270-PC provides storage for up to six user-definable symbol sets. Each symbol set can contain up to 190 symbols, IBM said.

The Host Interactive Business Graphics Board costs \$800 and will be available in the second quarter. First customer shipments of the 3270-PC began in February, IBM said.

The second graphics board, called PC Graphics Adapter, fits inside Models 2, 4 or 6 of the 3270-PC. The board allows the user to generate graphics for sessions running only under IBM's PC-DOS Release 2.0 or 2.1 operating system and provides four-color graphics with a resolution

of 360 by 350 or 320 by 200 pixels. In addition, the board allows users to generate two-color high-resolution graphics at 720 by 350 or 640 by 200 pixels, IBM said.

The PC Graphics Adapter costs \$550 and will be available in the second quarter.

The purchase price for a 3270-PC Model 4 with both the host and graphics boards is \$8,029. The configuration includes a processor, color display, host (programmed signals) graphics adapter, a PC Graphics Adapter, printer adapter, 3270-PC control program and IBM's PC-DOS Release 2.1 operating system.

The enhancements were announced by IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10073.



## SYSTEMS &amp; PERIPHERALS

## TURNKEY SYSTEMS

REDWOOD SOFTWARE SERVICES  
Universal Life

Redwood Software Services has developed a turnkey system based on the IBM Personal Computer for insurance agents.

Called the Universal Life system, the unit offers a standard 80M bytes of random-access memory, which can be expanded to more than 210M bytes. Software includes business, administration, reinsurance and proposal packages, the vendor said.

The business portion of the package provides current underwriting information plus predetermined underwriting requirements on com-

mand. Other features include: underwriting worksheets, a daily pending new business report with outstanding requirements, average-size policy, average premiums and average issues times.

The administration system handles multiple funds, annual statements on request as well as on the anniversary, on-line inquiry, premium notices, on-line policy maintenance and automatic error correction features.

The 80M-byte capacity of the initial unit can handle up to 800 paid new policies/mo plus 13,000 current policies. Hardware supplied is an IBM Personal Computer with IBM's PC-DOS 2.0 operating system, a printer and peripheral storage.

The complete Universal Life system, including hardware and software, costs \$67,500.

Redwood Software Services, 48 Barbaree Way, Tiburon, Calif. 94920.

BUSINESS SYSTEMS DEVELOPMENT CORP.  
Distribution Computer System

Business Systems Development Corp. has announced a turnkey system designed for use by automotive, hardware, electrical, construction,

grocery and other product distribution networks.

The Distributor Computer System reportedly allows a user to prepare quotes for customers; develop orders and print invoices; track and manage inventory; computerize accounting; tie into electronic mail services; help fill orders; and perform word processing functions.

According to the company, the key to the system is the request for quote file, which enables account executives to prepare a quote tailored to

the customer, drawing upon the cost of a part, discounts and markups, inventory and recent quotes to customers.

The system, available now, is said to be based on Convergent Technologies, Inc. AWS and IWS minicomputers and Burroughs Corp. B20 minicomputers. Prices range from \$5,000 to \$30,000.

Business Systems Development, 45 Davids Drive, Hauppauge, N.Y. 11788.

See TURNKEY page 76

## IBM from page 71

For 3083 users, noted Charles Greco, an IBM watcher with the Framingham, Mass.-based International Data Group, the future is not so dismal because there are several possible system upgrades that can be made before reaching the end of the road. But for users of the 3081 line, the migration path is very limited. Greco noted there is a maximum of two system upgrades possible for 3081 users.

And what happens to the residual value of the older 3080 series processors? Greco theorized that the X models may be field-upgradable to IBM's Sierra or Trout series of larger pro-

cessors, expected to be announced later this year. Since the X model processors do everything the older models can do, plus offer more performance for the same price, who will want the older models? Chances are, current users will wind up trading them among themselves.

The irony of IBM's announcement of the X models is the timing. While the 3080 line was kicked off with the 3081 Model D in 1981, most users did not receive 3080 series processors until about a year ago. Now the line is obsolete. IBM used to give users at least five years before announcing successors to its processors. Now users appear lucky if they get a year's worth of use out of their machines.

## PRINTER from page 71

Mischler, Gill & Duffus' manager of information services, designed a strategy to reduce the manual steps required to document trades, invoices and update accounts. For example, with terminals on the trading floor, a trader can enter transaction details as easily as reporting to a secretary, and the DP system will automatically complete the job.

The back-office operations needed an electronic printer capable of producing complex forms while simultaneously filling in forms with details on transactions. The printer's graphics capabilities would have to solve other problems faced by the DP department, such as maintaining up-to-date form design, he said.

Also, "designing, storing and changing forms had become a costly headache," Mischler said. "Our business requires small quantities of a variety of forms. Each afternoon, the DP staff was delayed by at least eight different forms changes."

Since contact with customers is by telephone and correspondence, Gill & Duffus places high priority on professional-looking documents, Mischler said. Letter-quality output with high dot density was a prime consideration for his electronic printer selection. Other requirements included high speed, quiet operation, use of plain paper and graphics capabilities. To reduce hardware costs, the intelligent printer would have to operate as four different devices — system line printer, word processing quality printer, a graphics device and plotter and a forms generator.

After investigating a variety of vendors, including IBM and General Business Technologies, Inc., Mischler chose Quality Micro Systems, Inc. (QMS) Lasergrafix 1200 intelligent laser printer based on his prior experience with a QMS controller board-enhanced Printronix dot matrix printer.

Installed in October 1983, the Model 1200 uses a Xerox Corp. print engine and is maintained by the Xerox

service network. The device prints up to 12 copy/min with a resolution of 90,000 dot/in. and is capable of bit mapping 8½-by-11-in. or 14-in. paper. Built-in firmware enables the Lasergrafix 1200 to produce complex graphics with simple user commands and requires no CPU memory. It is connected on-line and sits in the computer room with the System/38, which Gill & Duffus decided to purchase.

The decision to purchase came after a five-year amortization revealing that the company could save a "significant amount" of money by purchasing rather than leasing the system. In turn, the cost savings generated by the purchase helped Mischler get approval for the laser printer.

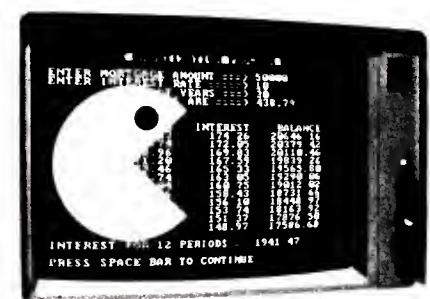
Also, another three IBM terminals have been added to the original seven attached to the System/38. User departments can now input information at the beginning of a transaction and send it to the printer, which is programmed to take over from there under an IBM spooling package, Mischler said.

"The Lasergrafix 1200 enables us

to design our own forms, store them and simultaneously print the form filled in with variable information," Mischler said. It also operates as a system printer without programming changes. "We have eliminated the delays and costs associated with designing, printing and changing forms during each afternoon's documentation process," he added.

While the current use of the printer is producing documentation, Mischler is also using graphics capabilities in producing reports. "Much information we need can be reported more concisely and is more quickly understood when converted to charts and graphs," he explained. "The printer enables our staff to combine charts with text easily and avoid complicated plotting procedures. The printer does all the work."

Aside from other benefits, the laser printer is making another important contribution to the automation strategy, according to the information systems manager. "The printer is so flexible and easy to use, even noncomputer types who resist automation are intrigued by its capabilities," he pointed out.



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If you've tried to transmit or receive data over non-dedicated, voice-grade communication lines, you're familiar with missing and incorrect data. Time lapses. Repetitive retransmission. And the interminable "WAIT" while typical error detection protocol tries unsuccessfully to insure error-free data. But maybe you're not familiar with what causes these problems. Everything from phone company and secondary carrier service routing to crosstalk and impulse noise. Basically problems beyond your control.

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STANDARD EVOL  
SYSTEM V

UNIX System Licensee ☐ Yes ☐ No ☐ Don't know



## SYSTEMS &amp; PERIPHERALS

**TURNKEY** from page 72**SCOTT SYSTEMS, INC.**  
Pars

Scott Systems, Inc. has introduced Scott Advanced Program Airline Reservation System (Pars).

Pars features magnetic card reader support, multiple screen modes, screen memory, text string facilities, communications trace mode and networking capabilities. Pars includes reservation software, an Intel

Corp. 8088 microprocessor and 64K bytes of random-access memory, which can be expanded to 1M byte.

The basic system costs \$3,400, and each terminal connected to the system sells for \$1,989.

Scott Systems, One Metropolitan Corporate Center, Marlborough, Mass. 01752.

**STEP ENGINEERING**  
Step-27

Step Engineering has announced its Step-27, a development station

that includes a disassembler for microprogrammers and design engineers.

The Step-27 reportedly supports bit-sliced and microprogrammed designs and provides Step Engineering's Writable Control Store memory package. It also features the company's Trace Instrumentation and its Disassembly, data-driven software package, according to the company.

It is said to use emitter-coupled logic 10-nsec random-access memory chips connected to the address and data pods.

Step-27 prices start at \$25,000, and it is available now.

Step Engineering, 757 N. Pastoria Ave., Sunnyvale, Cal. 94088.

**DATA STORAGE****WINCHESTER SYSTEMS, INC.**  
Datasafe-24

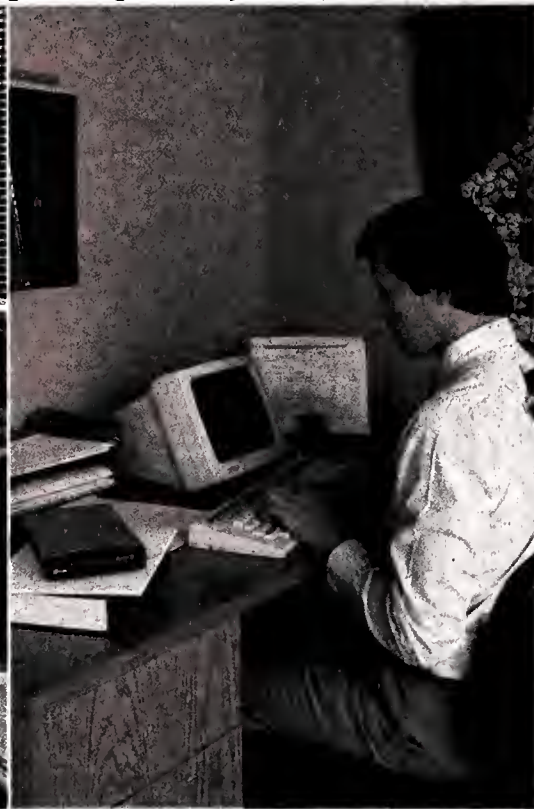
Winchester Systems, Inc. has introduced Datasafe-24, a 15M-byte, 5¼-in. fixed Winchester disk system

Continued on page 77

To all reps: Price changes on following items effective immediately:  
No. 10-11A, 10-114A, 10-AL.

Chris: The latest offer looks better, although it's still not what we were hoping for. Try for another compromise.

Just got the word from Gary. Increased our share by 6%. If trend holds, we'll pass competition by third quarter!



Smartcom II communications software, currently available for IBM PC, DEC Rainbow 100, Xerox 820-II and Kaypro II.

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Microcomputer communications can present the DP/MIS staff with a tangle of mis-matched hardware, user-hostile software, and a situation that can quickly get out of hand.

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The lower-priced Smartmodem 300 is ideal for local data swaps and communicates at 300 bps. A built-in speed selector on Smartmodem 1200 automatically detects transmission speeds (110, 300 or 1200 bps).

Smartmodem 1200B™ is also avail-

able as a plug-in board for IBM® Personal Computers. And Hayes manufactures the Micromodem II® for Apple® II, III, IIe and Apple Plus computers, as well. It comes packaged with Smartcom II™ communications software.

Speaking of software, more programs are written for Hayes modems than for any other. And that impressive list includes our own incomparable communications software.

Smartcom II™ Complete, menu-driven software for the IBM PC, DEC Rainbow 100™, Xerox 820-II™ and Kaypro II™. Even first-time communicators will find success with Smartcom II. Screen prompts guide users in the simple steps it takes to create, send, receive, list, edit, name and re-name files.

Tasks like simultaneously receiving, printing and storing data—completely unattended—are easily managed with Smartcom II, because it takes full advantage of Smartmodem's capabilities.

The program reduces lengthy dial-

up and log-on sequences to a single keystroke. It stores communications parameters for 25 remote systems.

Plus, there's an on-line help feature that explains prompts, messages and parameters.

Our reputation speaks for itself. Hayes has five years of solid leadership in the microcomputer industry. Nationwide availability through retail computer stores. Trouble-free factory service and call-in assistance. A limited two-year warranty on all hardware. And the most efficient telecomputing system available. Anywhere.

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Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092. 404/441-1617.

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Xerox 820-II is a trademark of Xerox Corporation.  
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Smartmodem 1200 for all computers with an RS-232C interface; Smartmodem 1200B plug-in board for the IBM PC.

**Smartmodem Specifications:**  
Low Speed Data Format: (Smartmodem 1200 and Smartmodem 300) Serial, binary, asynchronous; 7 or 8 data bits; 1 or 2 stop bits; odd, even or no parity (0-300 bps).  
High Speed Data Format: (Smartmodem 1200) Serial, binary, asynchronous; 7 data bits; 1 or 2 stop bits; odd, even, or fixed parity or 8 data bits; 1 or 2 stop bits; no parity (1200 bps).  
Dialing Capability: Touch-Tone® and rotary-dial pulse dialing.  
Command Buffer: 40 characters.  
Commands: (unnecessary with Smartcom II software) A: Immediate answer. A/: Repeat last command. C: Transmitter Carrier. D: Dial command, including simple dialing, waiting for second dial tone, auto-dialing and other features. E: Local echo. F: Full/half duplex. H: Switch hook. M: Audio monitor. O: On-Line. P: Pulse dialing. Q: Quiet mode. R: Reverse originate/answer mode. S: 17 "Set" commands speed, escape code character, number of rings to answer on, etc. St: Checks operational parameters above. T: Touch-Tone dialing. V: Verbal result codes.  
Result Codes: (can be numerical/verbal). 0/OK: Command line ok. 1/Connect: Carrier detected. 2/Ring: Phone is ringing. 3/No Carrier: Carrier lost or never heard. 4/Error: Error in command line. 5/Connect 1200: Carrier detected at 1200 bps. (Smartmodem 1200 only).  
Audio Monitor: Two-inch speaker with volume control.  
Rear Panel: On-off switch, power jack, RS-232C connector, modular phone jack connector, volume control.  
Operation: Full or half duplex.  
Data Rate: 0-300 bps and 1200 bps for Smartmodem 1200; 0-300 bps for Smartmodem 300.  
Interface: RS-232C.  
Intelligence: Z8™ microprocessor with 4K byte control program for Smartmodem 1200; 28 microprocessor with 2K byte control program for Smartmodem 300.  
Modem Capability: Bell System 103 or 212A compatible originate or answer mode for Smartmodem 1200; Bell System 103 compatible originate or answer mode for Smartmodem 300.  
Receive Sensitivity: -50dBm for Smartmodem 1200; -45dBm for Smartmodem 300.  
Transmit Level: -10dBm.  
Registration: FCC registered for direct-connect to the nationwide phone system. Connects with modular jacks RJ11W, RJ11C, RJ21W, RJ21C, RJ31W, RJ31C.  
Power Pack: U.L. listed 120VAC, 60Hz 13.5VAC output.  
Size: 1.5" x 5.5" x 9.6"



## SYSTEMS &amp; PERIPHERALS

Continued from page 76

for Intel Corp.'s Intellec Series II and III and Mohawk Data Sciences Corp.'s MDS-800 microprocessor development systems.

The Datasafe-24 was designed to replace the Intellec dual floppy drive, doubling the system throughput and offering a transfer rate of 625K byte/sec and an average access time of 85 msec.

Datasafe-24 reportedly has 24M bytes of unformatted (15M bytes formatted) storage. It costs \$7,995. The MDS-256, a 256K-byte printer spooler option that permits printing while programming, costs \$1,250.

Winchester Systems, Suite 4050, 400 W. Cummings Park, Woburn, Mass. 01801.

## TERMINALS

COMPUTER COMMUNICATIONS, INC.  
CCI 8274 group

Computer Communications, Inc. has announced the CCI 8274 remote cluster group, an addition to its Group 8000 family of IBM 3270-type terminal products.

The line consists of the 8274C remote cluster controller, the 8178 display station and the 8287 printer station. Product features include support for up to 40 IBM 3178-type displays; a user-selectable 26th status line on the screen that contains a cursor, row/column indicator, time of day and security key/lock password protection; and concurrent Ascii-to-IBM Synchronous Data Link Control protocol conversion.

The base price for the controller is \$4,995; the display station costs \$1,500, and the printer costs \$2,500.

Computer Communications, 2610 Columbia St., Torrance, Calif. 90503.

INNOVATIVE ELECTRONICS, INC.  
MC-80/600-1

Innovative Electronics, Inc. has introduced a communications processor that emulates an IBM 3274-51C communications controller running configuration support Level A.

According to the vendor, the MC-80/600-1 converts a Digital Equipment Corp. VT100-compatible terminal into a full-function IBM 3277 Model 1, 3272 Model 2, 3278 Models 1 and 2 terminal communicating with the IBM host using the Ebcidic Binary Synchronous Communications protocol.

The stand-alone, self-powered communications processor provides up to 16K bytes of read-only memory, 16K bytes of random-access memory and two serial communications ports.

The price for the basic unit is \$1,495.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

NCR CORP.  
5070 ATM

NCR Corp. has announced an interior automated teller machine (ATM) designed for the lobby environment of financial institutions and for uses in such sites as retail stores, airports, hospitals, office buildings and universities.

The 5070 can operate either as a full-function ATM or as a cash dispenser. Five thousand transactions

can be performed before replenishment is necessary, the vendor said.

The ATM measures 49½ in. by 32 in. by 29 in. and is priced at \$13,250. NCR, Dayton, Ohio 45479.

## GRAPHICS SYSTEMS

GENISCO COMPUTERS CORP.  
G-6200

Genisco Computers Corp. has introduced a color raster display system for applications such as computer-aided design and manufacturing, command/control and imaging.

The G-6200 is said to feature extensive color display capabilities. The basic configuration provides a 1,536 by 1,024 bit-map refresh mem-

ory that permits selection of 16 colors from among more than 16 million possible hues. Using optional memory cards, the color selection can be expanded to up to 4,096 colors, a vendor spokesman said.

The G-6200 includes a 19-in. monitor, detached keyboard, pan, scroll, zoom, cursor control, various peripheral support and the vendor's Gencor operating system. Graph tablet, digitizing table, text terminal and color hard copy are supported, as well as both RS-232 serial interfaces and optional parallel direct memory access controllers, according to the vendor spokesman.

The product is available in models with three viewable resolutions: the G-6210, with a 396 by 1,024 bit-map refresh memory; the G-6220, with 768 by 512 noninterlaced refresh

memory; and the G-6230, with 1,056 by 792 noninterlaced refresh memory.

The G-6210 and G-6220 are priced at \$23,950. The G-6230 costs \$24,750.

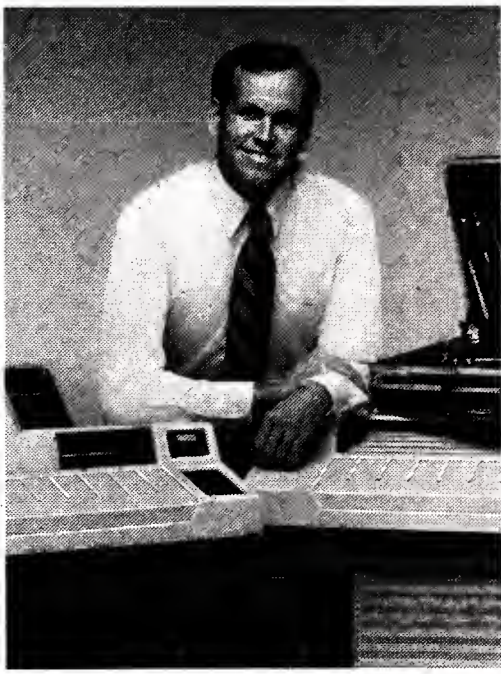
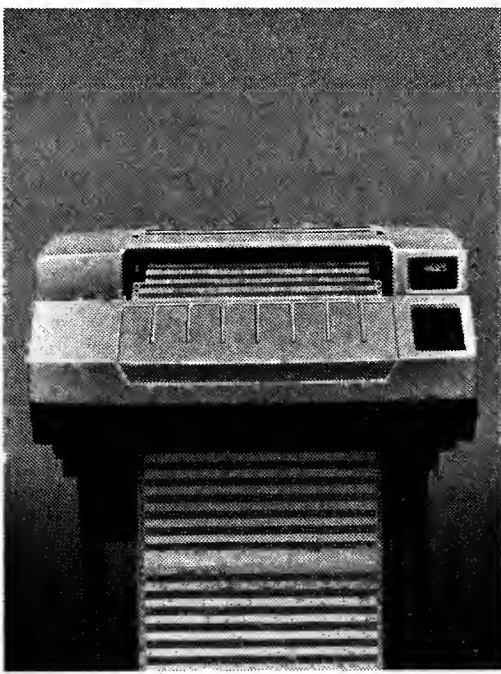
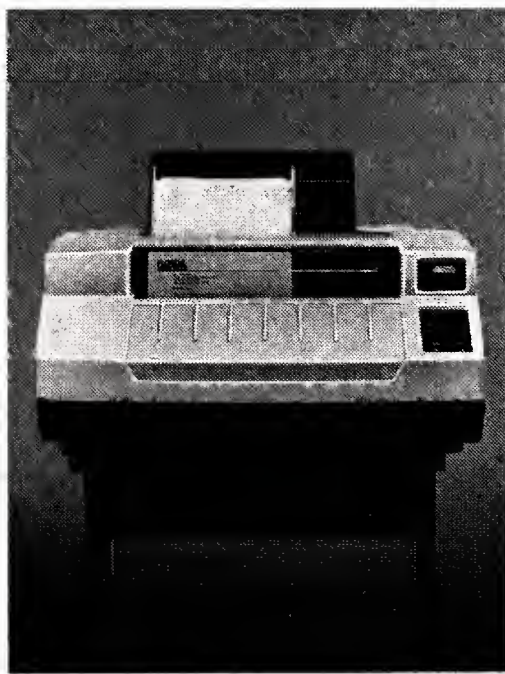
Genisco Computers, 3545 Cadillac Ave., Costa Mesa, Calif. 92626.

ALPHA MERICS CORP.  
Quickcad

Alpha Merics Corp. has announced a workstation reportedly designed for general-purpose computer-aided design.

Quickcad includes a central console incorporating a high-resolution color graphics display and keyboard, 8-in. diskette or optional Winchester disk storage, digitizing tablet, soft-

Continued on page 78



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## SYSTEMS &amp; PERIPHERALS

Continued from page 77

ware and a large format plotter, according to a vendor spokesman.

The control console comprises an Intel Corp. 8086 16-bit microprocessor, 512K bytes of memory and an optional Intel 8087 coprocessor. The CRT is a bit-mapped, high-resolution display. The basic unit is provided with dual 8-in. diskette drives with 1M-byte capacity each, the spokesman said.

The digitizing tablet has an 11- by 11-in. digitizing area and a positioning device with three function keys. The plotter is the vendor's large format, flat-bed Alphaplot device, the spokesman said.

Prices for the system range from \$14,990 to \$21,100.

Alpha Merics, 20931 Nordhoff St., Chatsworth, Calif. 91311.

#### MODGRAPH, INC. GX-100 F5

Modgraph, Inc. enhanced its GX-100 graphics terminal to offer the GX-100 F5 workstation, a graphics processor that runs Digital Research, Inc.'s CP/M operating system.

The GX-100 F5 features dual 5¼-in. disk drives, 64K bytes of random-access memory (RAM) and 768- by 585-pixel resolution. The GX-100 disk controller reads and writes 15 disk formats, the vendor said.

The system costs \$4,545.

Modgraph, 1393 Main St., Waltham, Mass. 02154.

#### DIGIGRAPHIC SYSTEMS CORP. Comgraph II

Digigraphic Systems Corp. has an-

nounced an integrated hardware and software system designed for graphics creation, teleconferencing, local meeting and executive review applications.

Comgraph II reportedly features IBM Personal Computer XT compatibility with data base access, color graphic creation, electronic presentation and audiographic teleconferencing. It allows graphic files to be structured in much the same way 35mm slide presentations are prepared in carousels, according to the company.

It is said to generate graphics with data received from a host mainframe or other data bases such as spreadsheet data using Digigraphic's spreadsheet package. Graphics can also be generated by drawing on the system keyboard or by utilizing electronic graphic tablets for free-form

design. Users can also develop graphics on IBM Personal Computer XT's using Digigraphic software, the vendor said.

Graphics resolution is 640 by 400 pixels, and there is a range of 4,096 colors, according to the company.

Digigraphic's audiographic teleconferencing reportedly uses standard telephone lines to transmit voice and data, and allows users to choose between 1,200 and 4,800 or 9,600 bit/sec.

Available now, the basic Comgraph II workstation, Interact 3000, includes an Intel Corp. 8088 processor, an Intel 8087 coprocessor, 512K-byte random-access memory (RAM) expandable to 640K-byte RAM, a 5¼-in. floppy disk drive, 60M-byte fixed disk memory, a 13-in. color monitor, keyboard and a conference keypad.

It is priced at \$22,500.

A smaller version, Interact 2000, will be available in April and is said to include less memory and less functional expansion capacity.

The Interact 2000 is priced at \$13,500.

Digigraphic Systems, 10273 Yellow Circle Drive, Minnetonka, Minn. 55343.

## POWER SUPPLIES

#### DATAPOWER, INC. DP-200-R series

Datapower, Inc. has introduced a family of open-frame 200W output switching power supplies, the DP-200-R series.

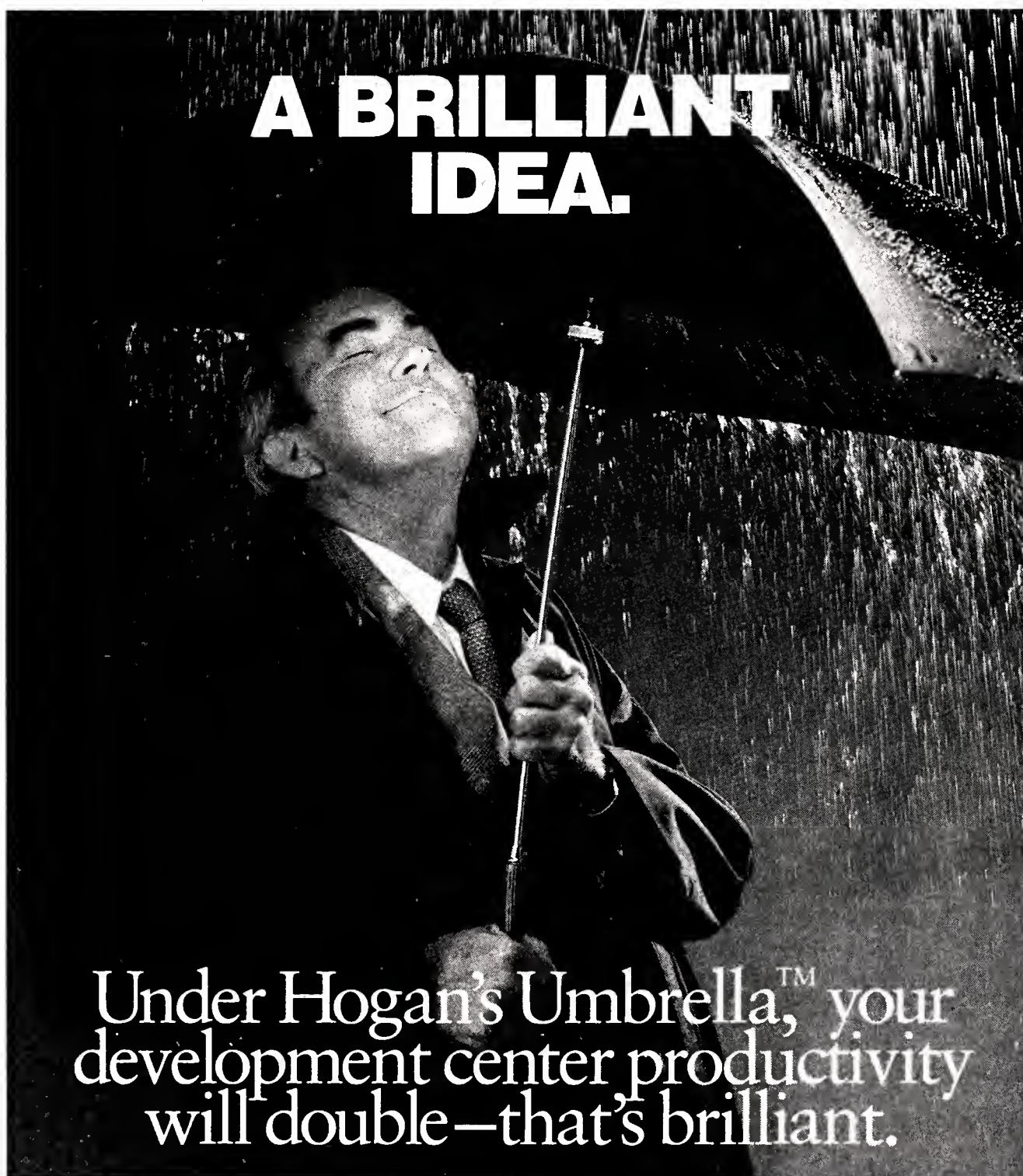
The series reportedly offers five regulated outputs and can function in a variety of voltage/current requirements.

The units are available in two model versions. The DP-200-R001's five outputs are factory preset at +5V/20A, +12V/4V, +12V/4A, +5V/2A and +24V/4V. Although the DP-2000-RXXX's five output levels are fixed at the same values as the factory preset model, the voltages can be specified by the user within the maximum power limit for the sum of all outputs, the vendor said.

Other features include internal radio frequency interference, electromagnetic interference, filtering to Federal Communications Commission and VDE noise suppression regulations, isolated returns on all outputs, remote sensing of cable losses and surge-limiting soft-start inputs.

The DP-200-R001 and the DP-2000-RXXX each cost \$298, a spokesman said.

Datapower, 3328 W. First St., Santa Ana, Calif. 92703.



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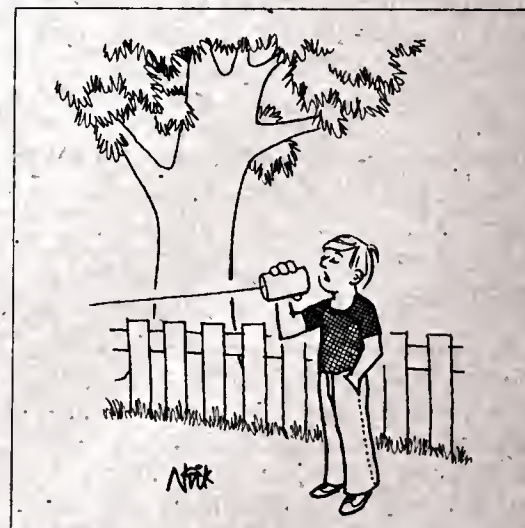
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'Listen, Joshua — new regulations now allow me to purchase my own empty can.'



# MICROCOMPUTERS



**MICRO BITS**  
Tom Henkel

## What IBM's move means to users

**W**hen IBM announced that its heretofore laboratory-oriented microcomputer, the System 9000, was available to commercial users capable of operating under Microsoft, Inc.'s Xenix operating system, it may have confused more users than it pleased.

The move means IBM is offering two lines of microcomputers aimed at the corporate user.

The popular Personal Computer line is based on Intel Corp.'s 8088 microprocessor and supports a variety of operating systems, including IBM's PC-DOS, Microsoft's MS-DOS and Digital Research, Inc.'s CP/M 86 and Concurrent CP/M. It also has recently gained support for an IBM version of Unix.

The newly announced 9002, which uses Motorola Corp.'s 68000 microprocessor, supports Xenix, some Unix applications and IBM's C/ps — the operating system announced with the original System 9000, the 9001.

In addition, the 9002 supports the C programming language, as well as Ryan-McFarland Corp.'s RM/Cobol.

### 'Hedging their bets'

"It seems [IBM] is hedging their bets," noted Chris Christensen, an industry analyst with the Boston-based The Yankee Group. Christensen added IBM appears to be offering some kind of microcomputer for every type of user.

But which is the best buy for users? The answer is unclear. Certainly IBM, as well as third-party software vendors,

See **9000** page 81

## IBM moves System 9000 into corporate sector

By Tom Henkel  
CW Staff

RYE BROOK, N.Y. — IBM has moved its scientific-oriented System 9000 desktop microcomputer into the corporate sector with a more compact, four-user model supporting Microsoft, Inc.'s Xenix operating system.

Like the original System 9001, which was designed for laboratory use, the 9002 uses a Motorola, Inc. 68000 microprocessor with 32-bit registers, 16-bit data flow and 24-bit addressing. However, the 9002 occupies roughly 28% less table space than the 400-sq-in. 9001, allowing it to be installed on an average desktop. Aside from the reduction in size, the 9002 hardware is essentially the same as the 9001, IBM said.

The 9002 has 128K bytes of random-access memory, expandable to 5.2M bytes in 256K-byte increments. Also included are 128K bytes of read-only memory, which contains the Xenix operating system.

The announcement appears to offer corporate users of IBM microcomputers yet another choice. Currently, IBM's popular

Personal Computer line, which is based on Intel Corp.'s 8088 microprocessor, can support Microsoft's MS-DOS, Digital Research, Inc.'s CP/M 86, IBM's PC-DOS and a version of the Unix operating system. Users have the option of selecting a multiuser 68000-based system that can run Xenix, plus many Unix-oriented programs.

The 9002 can support up to four 5¼-in. diskette drives offering 640K bytes of formatted storage or 8-in. diskette drives offering 985K bytes of formatted storage. Users can attach up to four 10M-byte hard disk drives to the 9002 system, IBM said.

### Supports four users

Operating under Xenix, the 9002 can support up to four users in a multiuser, multitasking environment. Included with the Xenix operating system is a C compiler, text editor, text processing and file transfer capabilities. Xenix is based on Unix Version 7 operating system and includes enhancements developed by the University of Southern California at

See **IBM** page 82

## Lotus 1-2-3, Chartman, Cheetah score high in package analysis

By Wing Louie  
Special to CW

This analysis provides information on specific features and performance characteristics of 13 application packages. Our objective in testing these packages was not only to ascertain specific features, but also to assess performance, reliability and ease of use.

The hardware charts are provided for the reader to be used as a quick reference to the configuration for each level's need. Although some hardware can be substitut-

ed, the level of compatibility is sometimes directly related to the software design.

Graphics software packages running on the IBM Personal Computer under IBM's PC-DOS are the basic requirement for this evaluation. We have defined three levels of graphics software, ranging from simple graphics like Lotus Development Corp.'s Lotus 1-2-3 to more elaborate ones like Centec Process Systems' Cheetah.

The levels are then arranged into categories and broken down into business

See **LEVELS** page 80

## Microgate line enhanced

AUSTIN, Texas — Gateway Microsystems, Inc. has added three terminal emulators to its Microgate line of communications products for IBM's Personal Computer, Personal Computer-XT, Compaq Computer Corp.'s portable computer and Columbia Data Products, Inc.'s MPC micros.

Microgate 6530 is an integrated, hardware/software product that emulates the Tandem Computer, Inc. 6520/6530 multipage terminals. Microgate 6530 supports local communications at 19.2K bit/sec with enhancements such as 16 pages of recallable display memory and integrated data exchange capability.

Microgate 940 is an integrated product that emulates Texas Instruments, Inc. 940/931 EVT terminals, allowing Personal Computers to be used as terminals in the TI DS990 and Business Series systems.

Microgate 742 is a TI Model 742 terminal emulator said to allow IBM Personal Computers to be placed into

most 742 polling environments.

Both the 6530 and 940 emulators employ Gateway's full-duplex, asynchronous host access (Flash) protocol for high-speed bidirectional data exchange between a Personal Computer and host. Minimum system requirements include 128K bytes of memory for the 6530 and 940 and 64K bytes for the 742.

Each product is priced at \$895, including a Gateway serial communications controller printed-circuit card, a diskette and a user's guide. The 742 is supplied with a modem cable. A user-supplied modem plus cables for the 940 and 6530 are required for communications with the host system over dial-up telephone lines. The file transfer package is included with the 940, but is extra with the 6530 and priced according to the host system on which it is installed.

Gateway Microsystems is located at 9501 Capital of Texas Highway, Austin, Texas 78759.

## Dynabyte unveils version of Monarch processor

MILPITAS, Calif. — Dynabyte Business Computers, Inc. has announced a version of its Monarch processor aimed at low- to mid-range users of the Basic Four Computer Systems Division of Management Assistance, Inc. minicomputers.

The Dynabyte system is based on both Intel Corp. 8086 and Zilog, Inc. Z 80 microprocessors, according to a spokesman for the company.

Based on Science Management Corp.'s Thoroughbred SMC operating system, the system, called the Monarch/Thoroughbred, is capable of running many nonproprietary Basic Four programs, such as specialized applications for the medical or veterinary fields, according to the firm's president William D. Parker.

A basic system includes a standard 256K bytes of random-access memory (RAM), which is expandable to 1M

byte, a 5¼-in. Winchester disk drive capable of storing up to 92M bytes of data, an 8-in. floppy disk drive for backup storage of up to 800K bytes of unformatted data and a streaming tape drive which can accommodate up to 17M bytes of unformatted data and operates at 6,400 bit/in.

The Monarch/Thoroughbred system can support up to 16 users.

The price for an entry-level eight-user system, which includes 19M bytes of RAM, a 19M-byte Winchester disk drive, a floppy disk drive and the Thoroughbred SMC operating system, is \$10,590, the spokesman said.

Additional information about the Monarch/Thoroughbred operating system is available from Dynabyte, which is headquartered at 521 Cottonwood Drive, Milpitas, Calif. 95035.

## INSIDE

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MICROCOMPUTERS

A closer look at two levels

Graphics software packages that fall into the Level 1 category — that which produces either simple graphics, specialized graphics or limited graphics — tend to be moderate in price or perform a single function well. Some special features are listed below:

■ Lotus Development Corp.'s Lotus 1-2-3 is excellent for using data and programming macros from its own spreadsheet to produce simple charts. Also, 1-2-3 is capable of performing complex mathematical functions.

■ Visicorp's Visitrend/Visiplot is excellent for data analysis and chart plotting. A user can enter and save business data and recall data to do complex forecasting and anal-

ysis to produce simple graphics.

■ Micrografx's PC-Draw is excellent for producing and creating custom design templates and for supporting light pens.

■ Digital Marketing Corp.'s PC-Crayon is excellent for general-purpose graphic design that can be used to create graphics symbols, vector symbols, cursor drawings and slide-show scenarios.

■ Datasoft, Inc.'s Graphics Generator is good for producing line charts and bar charts.

■ Desktop Computer Software, Inc.'s Graph 'n' Calc is good for mathematical calculations and simple spreadsheet functions.

■ Ferox Microsystems, Inc.'s See LOOK page 81

LEVELS from page 79

graphics, complex charts/visuals and machine requirements. The following paragraphs describe software and hardware configuration for each level.

Level 1 is a category of software which produces either simple graphics, specialized graphics or limited graphics. Simple graphics are defined as capable of producing basic bar, pie and line charts. Specialized graphics are packages capable of producing specific charts or graphs with ease. Limited graphics are software packages that can only perform limited functions. Level 1 software includes Micrografx's PC-Draw, Digital Marketing Corp.'s PC-Crayon, Lotus 1-2-3, Desktop Computer Software, Inc.'s Graph 'n' Calc, Visicorp's Visitrend, Datasoft, Inc.'s Graphics Generator and Ferox Microsystems, Inc.'s Graph Power.

The advantage of Level 1 is that the software tends to be moderate in

price and/or capable of performing a single function well.

The limitation of Level 1 software tends to be directly related to its cost. Generally, this group provides limited interface and limited device support with other software packages and hardware.

Recommendations for Level 1 software: Lotus 1-2-3 is an excellent multipurpose package which integrates spreadsheet, data base and graphics. It also provides an excellent tutorial and documentation.

Level 2 software produces most business graphs and some complex charts. Business graphics include pie, bar, line, XY, scatter, Gantt, organization and bubble charts. Complex charts include multiple type and size fonts and basic geometric shapes. Level 2 includes Business & Professional Software, Inc.'s BPS Business Graphics, Decision Resources' Chartmaster, Giraph's Giraphy, Graphic Communications, Inc.'s Graphwriter See LEVELS page 81

COMPLEX CHARTS/VISUALS

	Cheetah	BPS	Chart Master	Graph 'n' Calc	Visitrend/Plot	Gillaph	Graph Power	Graph Writer	Graphics Generator	Lotus 1-2-3	PC-Draw	Chartman II & IV	PC-crayon
Text 80 char.	●												
Text 40 char.	●		●		●			●			●	●	●
Special Fonts	●		●			●	●	●				●	●
Multiple type sizes	●	●	●					●		●	●	●	●
Text over lay	●	●	●		●			●			●	●	●
Polygon(s)	●										●		●
Box (var. sizes)	●										●		●
Circle (var. sizes)	●		●					●			●		●
Dot(s)	●		●								●		●
Templates	●										●		
Draw hor/ver lines w/cursor	●										●		●
Draw curves w/cursor											●		●
Text inside shape	●										●		●
Shrink/Expand a shape	●										●		●

MACHINE REQUIREMENTS

IBM color board and display		●	●	●	●	●	●	●	●	●	●	●	●
More than one monitor needed	●												
Special hi-res. monitor	●												
RAM requirements 128k or less		●	●	●	●	●	●		●				●
RAM requirements 128k or more		●	●	●	●	●	●	●	●	●	●	●	●
RAM requirements 320k or more	●	●	●	●	●	●	●	●	●	●	●	●	●
Asynchronous adapter (RS-232)	●	●	●	●		●	●	●	●	●	●	●	
Printer adapter	●	●		●	●				●	●	●	●	●

BUSINESS GRAPHIC FEATURES

	Cheetah	BPS	Chart Master	Graph 'n' Calc	Visitrend/Plot	Gillaph	Graph Power	Graph Writer	Graphics Generator	Lotus 1-2-3	PC-Draw	Chartman II & IV	PC-crayon
Bar chart(s)	●	●	●	●	●	●	●	●	●	●		●	
Clustered bar chart(s)	●	●	●	●	●	●	●	●				●	
Stacked bar chart(s)	●	●	●	●		●	●	●	●	●		●	
Horizontal bar chart(s)	●	●	●					●				●	
Line chart(s)	●	●	●		●	●	●	●	●	●		●	
XY chart(s)	●	●		●	●			●		●		●	
Pie chart(s)	●	●	●	●	●	●	●	●		●		●	
Hi-Lo chart(s)			●	●	●								
Scatter plot	●	●	●		●			●				●	
Gantt chart(s)	●							●				●	
Organization chart(s)	●							●				●	
Bubble chart(s)								●					
Grids on chart(s)	●	●	●		●	●		●				●	
Tables (w/ruled lines)	●											●	
Rescale ver/hor axis		●	●		●			●					
Absolute ver/hor scale		●	●		●			●				●	
Overlay chart(s)	●	●	●		●								
Multiple Chart(s)	●		●										
Accepts DIF files	●		●	●	●		●	●				●	
Accepts Other files	●	●	●			●		●	●	●		●	
Stored formats		●				●	●	●		●			
Accepts any print file		●						●	●	●			



## MICROCOMPUTERS

**LEVELS** from page 80

and Graphic Software, Inc.'s Chartman II.

Recommendations for Level 2 software: Chartman can solve many business graphics problems. It runs in compiled machine-language form and thus is the fastest in Level 2. The package is very easy to use with predefined formats to help a user with little time to spend on reading documentation.

Level 3 is the category of software with which almost any type of graphics application can be produced. The only graphics system for the IBM Personal Computer which falls into this category is Centec Corp.'s Cheetah.

Cheetah, which comprises both hardware and software, offers the most features when compared with other packages. It is also very easy to use. Cheetah's system can produce most complex graphics and can be interfaced with a spreadsheet by converting data into Software Arts, Inc.'s Data Interchange Format (DIF). Although most graphics programs can work with DIF data, Cheetah provides a DIF conversion utility within its menu. Cheetah can therefore take data parameters in DIF format from other spreadsheets to generate graphics output. Furthermore, the full Cheetah system can produce in-house

35mm slides, paper copies or projector transparencies.

Although Cheetah is a very powerful package, it is also the most expensive. Systems range from \$6,500 to \$42,000 including all hardware and software. Cheetah is primarily designed for the medium- to large-size company with large quantities of business art work. In addition, the package may be too cumbersome to use due to the overabundance of prompts.

Recommendations for Level 3 software: Cheetah is recommended for the company with quantity art work. It works very well with no major flaws and is a "low-risk" investment for the large company because, regardless of whether the package is used extensively, the hardware can be used in day-to-day operations.

*Louie is a computer specialist at Peat, Marwick, Mitchell & Co. in New York.*

**LOOK** from page 80

Graph Power is good for character fonts and producing simple graphics.

Level 2 software is aimed at the business world. It tends to provide the best documentation of the three levels. Examples include:

■ Business and Professional Software, Inc.'s BPS Business Graphics can interface with over 20 printers and plotters, produce simple

graphics and perform complex mathematical functions.

■ Decision Resources' Chart-Master produces six fonts with 16 sizes in color.

■ Graphic Software, Inc.'s Chartman can produce simple graphics, Gantt charts, organizational charts and scatter plots.

■ Graphic Communications, Inc.'s Graphwriter produces almost all types of graphs, including bubble charts.

# Qume's ANSI terminal hits all your hot buttons.



Qume's QVT 103™ has all the features that matter most in an ANSI terminal.

It's fully compatible, providing complete emulation of Digital's VT 52,\* VT 100,\* and VT 131.\* For substantially less cost than any of these terminals.

It's extremely reliable, thanks to Qume's advanced engineering and stringent quality control standards.

And it's backed by top-notch support through Qume's network of repair depots and GE's expert nationwide service.

But perhaps best of all, there's the security of doing

business with a strong, stable supplier. Qume is one of the world's largest manufacturers of computer peripherals, and a subsidiary of ITT Corporation.

Before you make your next terminal order, pick up your phone and hit our hot buttons — toll-free. We'll give you complete details on the QVT 103 ANSI terminal, and our other QVT alphanumeric and graphics terminals. Qume Corporation, 2350 Qume Drive, San Jose, CA 95131.

Call toll-free: 800-223-2479

## THE QVT-103

Your best  
investment  
in productivity.

\*Digital and Digital VT 52, VT 100, and VT 131 are registered trademarks of Digital Equipment Corporation.

**QUME**  
Subsidiary of ITT

**9000** from page 79

has succeeded in developing a voluminous amount of software for the Personal Computer and Personal Computer XT. In fact, there is a whole submarket for compatible devices for the Personal Computer line. But there is also a fair amount of software available for Xenix and Unix, and up to four users can work on a 9002 at the same time, each running different applications. For small businesses, the 9002 may prove a more cost-effective alternative. For corporate users, Xenix may make it easier to develop micro-to-main-frame links.

Is it possible IBM plans to make the more powerful, multiuser 9002 its favored son, leaving the Personal Computer in the dust? In the rapidly changing microcomputer market, announcements that rock the boat can make customers think twice about which product to buy. No one wants to buy a bunch of micros that will become obsolete shortly. And no one wants to buy micros that have the dubious distinction of being different from the rest of the systems on the market. That is largely why IBM has been so successful in the microcomputer business — because it promised stability. Now that stability appears to be shaken.



## MICROCOMPUTERS

### SYSTEMS

#### DECIMUS CORP. Microcheck

Decimus Corp. has introduced Microcheck, an item processing system for the IBM Personal Computer that is designed to help financial institutions with checking deposit analysis and reporting.

The main components of a basic system are an IBM Personal Computer; a Lundy Electronics and Systems, Inc. IMRS magnetic ink character recognition reader sorter; a Tecmar, Inc. fixed disk drive subsystem with 33M bytes of storage and 5M bytes removable storage; a Centronics Data Computer Corp. Linewriter 800 line printer; and a Decimus software package. The basic system is priced at \$89,050.

*Decimus, 2737 N. Main St., Walnut Creek, Calif. 94596.*

#### COMPUTER SYSTEM ASSOCIATES

##### Micro 68000ECB Microcomputer Trainer

Computer System Associates has announced a self-contained educational microcomputer designed to teach technicians and engineers about the architecture of computers using the Motorola, Inc. 68000ECB board.

The Micro 68000ECB Microcomputer Trainer is a tutorial aid intended for use by colleges and corporations. It reportedly includes a

68000ECB board, 6A power supply, base plate, backplate allowing access to two RS-232 I/O ports, a parallel port and audio tape serial I/O port. According to the company, it has a resident firmware package for a self-contained programming and operating environment.

It is available now and is priced at \$1,495.

*Computer System Associates, 7562 Trade St., San Diego, Calif. 92121.*

#### AES DATA CORP.

##### AES Savin 7100 Personal Work Station

AES Data Corp., introduced AES Savin 7100 Personal Work Station, a stand-alone word processing system which runs Digital Research, Inc.'s CP/M operating system.

The system features a 12-in. screen; a Zilog, Inc. Z80 microprocessor; 128K bytes of random-access memory; and an RS-232 serial port, the vendor said. A 45 char./sec daisywheel printer is included with the system, according to the vendor.

The system costs \$5,995.

*AES Data, P.O. Box 10272, 9 W. Broad St., Stamford, Conn. 06904.*

#### CHASE TECHNOLOGIES, INC. Chase DL expansion card

Chase Technologies, Inc. announced that its Chase DL microcomputer now comes with an Orchid Technology, Inc. PCnet expansion card.

Chase DL features an Intel Corp. 8088 microprocessor, nine expansion

slots and 128K bytes of random-access memory (RAM), according to the vendor.

One expansion slot holds an Orchid Technology PCnet Plus multifunction card and 128K bytes of RAM, the vendor said.

Chase DL costs \$2,395, the vendor said.

*Chase Technologies, 375 Sylvan Ave., Englewood Cliffs, N.J. 07632.*

#### ET COMPUTER SYSTEMS, INC. ET-2010

ET Computer Systems, Inc. has introduced a personal and business desktop computer, the ET-2010.

The unit features 64K bytes of

random-access memory expandable to 1M byte; a Zilog, Inc. Z80A 4 MHz microprocessor; a built-in 9-in. screen with 80 col. by 24 line display; parallel centronics and serial ports; and a 76-key typewriter-style keyboard with numeric key pad, the vendor said.

The operating system is ETPM II, an enhanced version of Digital Research, Inc.'s CP/M. Standard software includes spreadsheet, general ledger, accounts receivable and accounts payable programs.

The two-piece system, with two disk drives, a 9-in. CRT terminal and keyboard, sells for \$1,349.

*ET Systems, 8161 Broadway, Lemon Grove, Calif. 92045.*

### IBM from page 79

Berkeley. Users of the 9002 can also use IBM's C/ps operating system, announced in 1982, along with the original 9001. In addition, IBM said users of the 9001 can also use Xenix.

The 9002, operating under Xenix, can support Fortran, Pascal and Ryan-McFarland, Inc. RM/Cobol programming languages. Fortran and Pascal cost \$595, and RM/Cobol costs \$1,250. All three languages are available through IBM, a spokesman said.

In addition to an 83-key keyboard, the 9002 is equipped with a 57-key membrane key pad for data entry. Each key on the key pad is user definable, IBM said.

Available in the second quarter, a basic 9002 desktop unit, including a keyboard, display and IBM's C/ps op-

erating system, costs \$6,495; however, to use Xenix, users must add a 10M-byte hard disk drive and a memory management card. A system configured to run Xenix costs \$15,960. There is a one-time license charge for Xenix of \$995, and a single 10M-byte hard disk drive and cabinet cost \$2,195. Memory enhancements for the 9002 cost from \$1,395 for a 256K-byte upgrade to \$3,180 for a 1M-byte upgrade, IBM said.

Xenix will be marketed through IBM Instruments, Inc. The 9002 is available through IBM Instruments and IBM's National Accounts, National Marketing and National Distribution divisions.

The system was announced by IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10573.

## Is your Mainframe suffering midlife crisis?





## MICROCOMPUTERS

## MICRO STORAGE

**1<sup>2</sup> INTERFACE, INC.**  
**1<sup>2</sup> Disksystem**

1<sup>2</sup> Interface, Inc. has announced a 33M-byte disk subsystem for the IBM Personal Computer and compatible systems.

Called the 1<sup>2</sup> Disksystem, the unit reportedly includes a 33M-byte Winchester disk drive, cabinet, power supply, cable, connector and I/O adapter, according to the company.

Available now, the subsystem has a suggested retail price of \$2,795.

1<sup>2</sup> Interface, 7630 Alabama Ave., Canoga Park, Calif. 91304.

PRINTERS/PLOTTERS/  
PERIPHERALS**AXONIX CORP.**  
**Thinprint 80**

Axonix Corp. has introduced Thinprint 80, a battery-powered, full-page thermal graphics printer that weighs 4 lb.

According to the vendor, Thinprint 80 features 40 char./sec bidirectional printing, buffer memory, a print speed of 80 or 136 char./line and serial or parallel interface.

The product's retail price of \$279 includes rechargeable batteries, an ac adapter and an 80-page roll of paper.

Axonix, 417 Wakara Way, Salt Lake City, Utah 84108.

**SCIENCE AND COMMUNICATIONS, INC.**  
**3400 Streamer**

Science and Communications, Inc. has introduced 3400 Streamer, a 34M-byte, 1/2-in. tape system for the IBM Personal Computer.

An intelligent front-panel display informs the user of the machine's status and permits 99 diagnostic tests.

Two models are available, one which stores 1,600 bit/in. and one which holds 3,200 bit/in. The 3400 Streamer costs \$5,995; its 1,600 bit/in. model sells for \$5,295.

Science and Communications, 352A University Ave., Westwood, Mass. 02090.

## BOARD-LEVEL DEVICES

**WICAT SYSTEMS, INC.**  
**Exrcom**

Wicat Systems, Inc. has introduced a device to be used to provide remote training and servicing for its customers.

The Extended Remote Computer Control Service (Exrcom) was designed to connect a remote terminal to a host CPU. After the connection is made, the vendor said, the master console is able to observe while the remote user either tests or demonstrates software use.

Exrcom is available in two models. One model consists of the Exrcom device and cable connections and sells for \$1,250. Another model includes

an additional built-in modem and costs \$1,500.

Wicat Systems, P.O. Box 539, 1875 S. State, Orem, Utah 84057.

## AUXILIARY EQUIPMENT

**GOULD, INC.**  
**Personal Conditioner enhancement**

Gould, Inc. has announced an enhanced version of its Personal Conditioner, a power line conditioner for the IBM Personal Computer XT.

Personal Conditioner with 400V can support a Personal Computer XT and printer, according to the vendor. The power suppressor filters noise from any amplitude, assures precise voltage and pure sine wave power to computers requiring up to 3.33A of 120V power, the vendor said.

Personal Conditioner costs \$349.

Gould, Power Conversion Division, 2727 Kurtz St., San Diego, Calif. 92110.

## MICRO SOFTWARE

**U.S. SOFTWARE CORP.**  
**68000 Fpac; 68000 Dpac Floating Point Libraries**

U.S. Software has announced the 68000 Fpac and 68000 Dpac Floating Point Libraries, sets of subroutines used to process floating-point numbers in the proposed IEEE KCS (Kilocharacters Per Second) single- and

double-precision formats for the Motorola, Inc. 68000 microprocessor.

According to the vendor, the systems are delivered in optimized source assembly language form to allow flexibility.

The price for the single-precision 68000 Fpac is \$750, and the price for the double-precision 68000 Dpac, which includes the 68000 Fpac, is \$1,250.

U.S. Software, 5470 N.W. Innisbrook Place, Portland, Ore. 97229.

**MICRO DATA BASE SYSTEMS, INC.****Kpaint; Ktext; Kgraph**

Micro Data Base Systems, Inc. has added three modules to its Knowledgebase package for users of Microsoft, Inc.'s MS-DOS and Digital Research, Inc.'s CP/M 86 operating systems. The modules are: Kpaint, Ktext and Kgraph.

Kpaint allows the user to design forms interactively with 64 different foreground and background colors. Kgraph produces bar charts, scatter diagrams, pie charts and free-form diagrams, according to a vendor spokesman.

Ktext is a full screen text editor. Knowledgebase integrates a relational data manager, spreadsheet, statistical analysis, a screen I/O manager, printed form manager and programming language.

Kpaint costs \$100, Ktext sells for \$100 and Kgraph is priced at \$225.

Micro Data Base Systems, P.O. Box 248, Lafayette, Ind. 47902.

See **TOOLS** page 84

Find a new mate.

## New Attachmate-3270 adds multiple Mainframe windows to your IBM Personal Computer.

Attachmate's coax interface board can bring out the best in your existing mainframe.

When connected to your mainframe, your IBM Personal Computer can be as many as four 3278 terminals. You can work up to seven different programs and display each in a separate window.



Not one



Not two



But more windows

Looks just like a new IBM-3270 PC, doesn't it?

**What's more:**

- Attachmate-3270 provides more mainframe security—only you have the key.
- You can coax connect to all existing 3270 control units and use in-place Bisync and SNA networks.
- You can share those high speed 3270 printers to save money, time, workspace.
- You can transfer files and share data with your mainframe and other PC's as well as access 3270 printer data to print, process, send or save.
- And, as a bonus, Attachmate's single-slot board can expand your memory by 256K bytes.

**What's less:**

- The price. Attachmate-3270 gives your mainframe and PC all of this new life—compatibility, flexibility, function and immediate delivery for less than \$1,000. For more facts:

Attachmate Corporation, (206) 644-4010,  
3241-118th S.E., Bellevue, WA 98005. Dept. CW3

Name \_\_\_\_\_

Title \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_ Phone \_\_\_\_\_

**The Mating Call: 1 800 IBM-MATE**

**Attachmate**



## MICROCOMPUTERS

## TOOLS from page 83

**LATTICE, INC.**  
C Compiler Version 2

Lattice, Inc. has announced Version 2 of its C Compiler for the IBM Personal Computer and other computers using Microsoft, Inc.'s MS-DOS operating system.

Version 2 is said to enable C programs to access the complete 1M-byte program and data space that can be addressed by Intel Corp. 8086 and 8088 microprocessors. According to Lattice, four distinct memory models are supported. The S and P models produce code that can address up to 64K bytes of data, while the D and L models allow access up to 1M byte of data. Program size is 64K bytes in the

S and D models and 1M byte in the P and L models.

Version 2 of the C Compiler is available from Lattice for \$500, and the library source code has been reduced from \$1,500 to \$500. Current users of the compiler can obtain an update by contacting the point of original purchase.

*Lattice, Box 3072, Glen Ellyn, Ill. 60138.*

**REALIA, INC.**  
Realia Cobol

Realia, Inc. has announced Realia Cobol, a compiler that also tests IBM VS Cobol programs on an IBM Personal Computer or Personal Computer XT.

For a floppy disk system, the compiler reportedly completes 700 to

1,500 lines of code/min. For a hard disk system, 1,200 to 2,600 lines of code are compiled per minute, the vendor said. The compiler accepts Ansi-74 Cobol with extensions programs and supplies structured programming facilities, according to the vendor.

The compiler features a cross-reference listing, an expanded code listing, symbolic debugger and a nonlicensed runtime library, according to the vendor.

Realia Cobol costs \$995.

*Realia, 10 S. Riverside Plaza, Chicago, Ill. 60606.*

**SOFTREND, INC.**  
Aura

Softrend, Inc. has announced Aura, an integrated package that in-

cludes data base management, spreadsheet, word processing and graphic applications.

Using a menu-driven interface, users can sort, select, edit and index data stored in the data base management system, according to the vendor. The spreadsheet function links different spreadsheets, supplies 255 col. and 63 rows for a spreadsheet, offers 50 statistical functions and includes a zoom function which allows the user to inspect data in related spreadsheets, according to the vendor.

The word processor can edit several documents concurrently and move text between documents. The word processor reportedly features unlimited document length, rulers, headers, footers, advanced print control and multiple copy printing. The graphics module produces free-form as well as presentation quality graphics, the vendor said.

The package is written in the C programming language. It requires 256K bytes of random-access memory and either a hard disk or two double-sided, double-density drives.

The program costs \$495.

*Softrend, 2 Manor Pkwy., Salem, N.H. 03079.*

**SOFTLOGIC SOLUTIONS**  
Doubledos

Softlogic Solutions has released Doubledos, an operating system enhancer that is said to allow the IBM Personal Computer and Personal Computer XT to accomplish two functions simultaneously.

By dividing a system's memory into two user-determined areas, Doubledos allows two programs to be run at the same time. A program may be loaded into either memory area and then allowed to process in the background without keyboard interaction, the company said.

Doubledos works with Release 1.1 or 2.0 of IBM's PC-DOS operating system and requires a minimum of 128K bytes of memory.

Doubledos is priced at \$299.

*Softlogic Solutions, 530 Chestnut St., Manchester, N.H. 03101.*

**VIKING SOFTWARE SERVICES, INC.**

## Viking Forms Manager

The Viking Forms Manager (VFM), an on-line screen formatter and data entry software package from Viking Software Services, Inc., is now available for Digital Equipment Corp.'s Professional 300 series personal computers.

According to Viking Software, all programming is eliminated to create, update and key-verify data files. The package features three levels of data validation.

VFM consists of a forms development facility, the Viking data entry software and a variety of utility programs. The single quantity price is \$600 with quantity discounts available.

*Viking Software Services, 2815 E. Skelly Drive, Tulsa, Okla. 74105.*

**OFFICE SOLUTIONS, INC.**  
Officewriter 2.0

Office Solutions, Inc. has released an updated version of Officewriter, a word processing package for the IBM Personal Computer, Personal Computer XT and compatible systems.

Officewriter 2.0 includes such

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FROM **ATS**





**Continued on page 86**

**Short-term rentals available**



## MICROCOMPUTERS

## Continued from page 85

Personal Computer and Personal Computer-compatible systems, the Personal Computer XT, the Apple Computer, Inc. Apple IIe and Apple III, the Texas Instruments, Inc. TI Professional and the Wang Laboratories, Inc. Professional computers.

*Great Plains Software, 1701 S.W. 38th St., Fargo, N.D. 58103.*

## CLEO SOFTWARE

Cleo 3270; Cleo 3780

Cleo Software has introduced two communications software packages that allow the Hewlett-Packard Co. HP 150 to emulate IBM 3270 and 3780 terminals.

The Cleo 3270 and 3780 packages utilize one of the RS-232 ports on the HP 150, and no additional hardware

is required, according to the vendor. For the HP microcomputer, the suggested license price for both packages is \$500.

Both 3270 and 3780 also run on Industrial Micro Systems microcomputers running Musys Corp.'s Turbodos 1.3 operating system. The 3780 supports IBM's Binary Synchronous Communications protocol for high-speed transmission, up to 9,600 bit/sec and reception of data files over telephone lines. The license price for the 3780 is \$395, and the price for 3270 is \$750.

*Cleo Software, 461 N. Mulford Road, Rockford, Ill. 61107.*

COMPUT-TOME, INC.  
CT-OS 86

Comput-Tome, Inc. has announced

an enhanced version of its word processing software that will run under Digital Research, Inc.'s CP/M 86 operating system.

According to the vendor, CT-OS/86 is targeted for use with Digital Equipment Corp.'s Rainbow personal computer. With it, users are able to transfer word processing files from DEC VAX and PDP-11 series host processors to Rainbows and to a variety of other personal computers that use the operating system.

The product provides search and replace, cut and paste, list processing, Ascii file handling, 132-col. document width, stored text libraries, right-justified margins, scientific character set and a repertoire of user-defined keys to invoke special word processing functions.

CT-OS/86 is priced at \$950 for a

single-user license, including list processing, spelling corrector and full documentation. Delivery takes 30 days after receipt of order.

*Compu-Tome, 234 E. Colorado Blvd., Pasadena, Calif. 91101.*

## AARON/SMITH ASSOCIATES, INC.

Finder

Aaron/Smith Associates, Inc. has announced Finder, a data retrieval package for users of IBM Personal Computer and Personal Computer XT microcomputers as well as those manufactured by Radio Shack.

The package runs on IBM micros equipped with IBM's PC-DOS Release 2.0 operating system, the vendor said.

It also runs on Radio Shack TRS-80 Models II, 12 and 16 (running as a 12), with Radio Shack's TRS-DOS operating system Release 2.0 or 4.2. The minimum main memory requirement is 64K bytes for both IBM and TRS-80 systems, the vendor said.

Finder was designed to store and retrieve textual information using large data bases.

The package was designed for use by libraries, information centers and records managers, according to the vendor.

*Aaron Smith Associates, Suite 518, 1422 W. Peachtree St. N.W., Atlanta, Ga. 30309.*

## FASTWEAR, INC.

Thor

Fastwear, Inc. has announced Thor (thought organizer), a thought-processing package for the IBM Personal Computer and Personal Computer XT.

According to the vendor, Thor integrates the free-formatting facility of a word processor and the filing and retrieval capabilities of a dedicated data base manager into a single program.

Thor reportedly allows the user to record, categorize and retrieve thoughts without any knowledge of computer syntax. Thoughts can range in size from one line to multiple pages.

Minimum system requirements are 128K bytes of memory running DOS 2.0 or more current.

Thor is priced at \$295.

*Fastwear, 200 Freeway Drive E., East Orange, N.J. 07018.*

## ADVANCED SYSTEMS CONCEPTS, INC.

Protact

Advanced Systems Concepts, Inc. has announced the extension of its Integrated Applications Control package for the Digital Equipment Corp. Professional 300 series microcomputer.

Protact was designed to provide terminal, file and network management for the Professional 300 series. It allows one or two users to access applications on a local or remote Professional, DEC PDP-11 or VAX processor.

According to the vendor, Protact file manager uses DEC's Record Management Services as its file access method.

A Protact developer's kit is priced at \$2,500; a runtime license costs \$395, and the terminal server costs \$595.

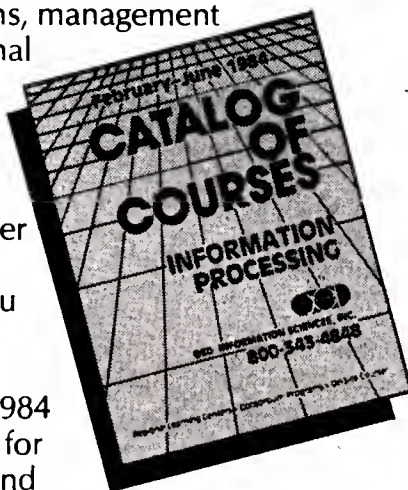
*Advanced Systems Concepts, 22 Hudson Place, Hoboken, N.J. 07030.*

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- DP Concepts for the Non-DP Manager
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# COMPUTER INDUSTRY



## INDUSTRY INSIGHT

Jeffrey Beeler  
CW West Coast Bureau

### 'PC/34' to debut? Predictions vary

**I**BM is said to be preparing the introduction of an additional small business processor that will fall somewhere in performance between the company's System/36 and its Personal Computer XT.

A scaled-down version of the System/36 would make a logical addition to Big Blue's existing small business computer product line, according to a sampling of industry watchers.

But on the question of exactly what form the predicted processor is likely to take, the sources' opinions sometimes differ sharply.

One user source, who asked not to be identified, foresees the introduction of an "entry-level" System/36 that will incorporate just one diskette slot and cost less than \$20,000. The low-end addition to the System/36 family will probably be announced "within the next 45 days," according to the source.

Echoing the prediction of a stripped-down System/36 announcement is Brian Jeffery, research director at the Palo Alto, Calif.-based International Technology Group, Inc. Jeffery expects the System/36 extension to occupy a critical place in an IBM product spectrum that will also eventually include an additional microcomputer capable of emulating the company's most popular small business processor, the System/34.

Tentatively nicknamed the "PC/34," the hypothesized micro will be aimed mainly at small businesses and will be intended to provide a migration route for users of IBM's existing Personal Computer XT, Jeffery predicted.

IBM's small business systems lineup would include — in ascending order — the Personal Computer, Personal Computer XT, PC/34, System/34, entry-level

See **IBM** page 106

## Off-site backup spreading

By Robert Batt  
CW West Coast Bureau

**MENLO PARK, Calif.** — The proliferation of microcomputers in Fortune 1,000 type organizations and fears of natural disasters and computer hackers have resulted in a surge in demand for off-site storage protection, according to service providers.

"The spread of micros in particular is drawing attention to the need for off-site storage," according to Jim Valentine, president of Secured Data Services, Inc. "Without adequate backup arrangements, the personal computer will cause a lot of problems."

The increase in awareness has also resulted in data processing managers being burdened with protecting the company's information assets as well as performing their day-to-day activities, and often they cannot cope, off-site storage providers told *Computerworld* recently.

According to Bill Dreyer, vice-president of marketing for the Iron Mountain Group, an off-site security firm in Rosendale, N.Y., "Data processing managers are feeling the pressure. They need help and assistance. The main problem is that they are looked to to provide solutions, but they do

not have the resources to identify all the information that should be backed up."

Nevertheless, security firms are reporting a big increase in demand for their services. "Since we opened our doors a year ago, we have been doubling our business every few months. We now have 100 clients alone who store computer materials, and we expect to double that figure by the end of the year," said Donald Rickgauer, executive vice-president of National Safe Depository (NSD), based in San Jose and serving the Silicon Valley area.

The number and type of storage clients vary widely. For example, Secured Data Services in Ohio opened 18 months ago and now has 24 customers storing computer media in fields such as energy, transportation and the financial sector. Iron Mountain, established in 1957, has five storage facilities and about 1,200 customers, many of them banks and high-technology manufacturers from the Northeast.

Most storage firms provide courier service to and from their clients' facilities. This is reportedly of vital importance, especially to large organizations that need their backup data available on a monthly, See **STORAGE** page 94



McDonnell Douglas Corp. does an about-face and again decides to acquire Tymshare, Inc., but at a lower price/90

## INSIDE

■ This may be the year the U.S. robotics industry takes off, but a proliferation of manufacturers could erode profits, and socio-economic problems could delay purchases/89

■ Quiet talks between IBM and state-owned Stet could spell problems in Italy for Ing. C. Olivetti and Co. S.P.A./93

■ Computer technology is moving out of the back room and into the boardroom, which means a new set of problems for attorneys, according to a Harvard Business School professor/98

## Honeywell refocusing services

By Peter Bartolik  
CW Staff

**NEWTON, Mass.** — Third-party maintenance presents an opportunity for Honeywell, Inc. to prepare for recessionary times and to utilize a cadre of service engineers whose relative value declines as hardware reliability increases and cost decreases.

Those are the primary reasons why Honeywell is engaged in a year-old effort to turn its service organization into a service business, according to Sy Kraut, Honeywell vice-president and general manager of the company's Customer Services Division headquartered here.

A third factor, he said during a recent interview, is that smaller microcomputer vendors simply cannot afford to carry a nationwide service organization.

Honeywell, which celebrates its centen-

nial in 1985, has been in the service business for more than 25 years, Kraut said. The company hopes to build on that tradition and move into the hierarchy of the top six third-party maintenance vendors who, according to Kraut, earn 51% of third-party maintenance revenues in the U.S. "I've seen figures saying that in 1984 there could be \$800 million to \$1.2 billion in third-party maintenance; we feel we can pick up our fair share of that," he said.

The company has evolved the concept of the Integrated Service Supplier, which means providing service to a business that may have many types of computer-related equipment from many suppliers. According to Kraut, a businessman with hundreds of varied processors, terminals, modems, private branch exchanges and local-area networking "wants to be able to call one

See **KRAUT** page 106

# Top Quarterback in the EDP

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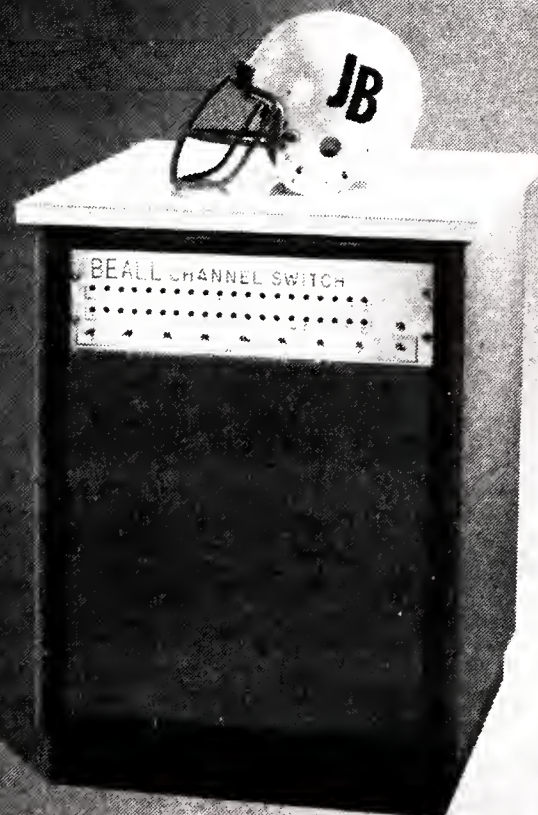
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## COMPUTER INDUSTRY

# Analysts predict 'breakout' for robotics in '84



## OUTSIDE LINES

Bohdan Szuprowicz

After several false starts in previous years, industry observers and analysts are now predicting that 1984 will be the real "breakout" year for robotics.

Much of this optimism assumes that industrial plants will begin to modernize in earnest, as the economic recovery picks up steam and firms install robots to compensate for high labor and operating costs.

Most recent estimates of overall robot markets continue to be bullish, estimating robot sales of \$240 million in 1983 and a \$2 billion market by 1990. But the robot promoters often forget that the proliferation rate of robot manufacturers in recent years was probably even higher than that. This has eroded any profits for robot suppliers.

There are believed to be between 200 to 300 Japanese robot suppliers, up to 100 American and several dozen European firms all chasing a relatively small market in which only about 15 suppliers are expected to survive with a reasonable market share to make a profit.

This flood of competitors in the robotics field is largely blamed on excessive "media hype" which often extolls the benefits without giving equal time to the potential and real problems associated with extensive use and rapid introduction of robots. A major concern is the loss of jobs at a time when unemployment in all the industrialized countries is breaking record levels. Political pressure on Congress is mounting to estimate the labor dislocation resulting from use of robots in the future and to come up with proposed remedies and sources of funds to implement such programs.

As a result, many manufacturers may be reluctant to install robots in their plants until the issues are resolved and they are assured that future labor and government action will not force them to engage in expensive retraining projects or that they will not be otherwise taxed or penalized for introducing automation that results in permanent elimination of jobs in their respective industries.

One industry where robots are making rapid inroads is electronics. Productivity in electronics plants can be improved significantly through the use of electronic assembly robots that are designed to pick and insert nonstandard parts and components into printed-circuit boards of electronic equipment subas-

semblies. The electronic assembly robot market is in a truly emerging stage, estimated at only \$3 million to \$4 million today but expected to grow 74% annually through 1985, more than twice as fast as the overall robotics market. It will probably reach a \$500 million market by 1990, becoming

the most sophisticated segment of the robotics industry.

Critical to future productivity improvements in electronic assembly are the multivision robotic systems that depend on artificial intelligence and vision technologies as well as on precision and microcomputer controls.

Price still remains a major deterrent because current vision-integrated robots cost about \$125,000, while the market is unlikely to tolerate prices much above \$40,000. Nevertheless, some new companies are already pioneering in this promising field with specialized robots designed to take advantage of

these developing opportunities.

The latest entrant in this segment is Autobotics, a start-up specializing in robots designed to improve productivity of magnetic disk drive manufacturers. Few people are aware that about 32% of disk drives fail in-

See **ROBOTS** page 104

## KEY TRONIC Enhances The VT-100\* Keyboard



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## COMPUTER INDUSTRY

# McDonnell Douglas finalizes Tymshare acquisition

ST. LOUIS — McDonnell Douglas Corp. announced last week it has again agreed to acquire Tymshare, Inc., a move expected to boost McDonnell Douglas' subsidiary, McDonnell Douglas Automation Co. (McAuto), into the list of the three largest processing vendors.

The move had initially been announced late last year [CW, Dec. 5], but fell through. A spokesman for McAuto said the acquisition is basically the same as that announced previously, but that the parent corporation had as yet made no announcement about how Tymshare will be managed.

The value of the purchase has been reduced, perhaps reflecting Tymshare's net

loss for 1983 of \$1.5 million, a figure that had been reduced by favorable tax benefits from a total loss of \$6.6 million.

In the fourth quarter of 1983, Tymshare posted a net loss of \$1.4 million, reduced by tax benefits from a total loss of \$3.5 million. In 1982, Tymshare had posted profits

of \$8.8 million, but had experienced a fourth-quarter loss of \$2.3 million.

McDonnell Douglas, according to the spokesman, has a "definitive agreement" to purchase 12.3 million shares of Tymshare at \$25 per share, for a total value of \$307.5 million.

In December's announce-

ment, the value of the acquisition had been placed at \$372 million, or about \$31 per share. Additionally, McDonnell Douglas has been granted an option to purchase 2.5 million unissued shares of Tymshare at \$25 per share; those unissued shares had been priced in December at \$31 per share.

The company intended to issue a tender offer for the outstanding Tymshare stock by last Friday, the spokesman added.

McDonnell Douglas will use Tymshare's Tymnet value-added communications network to expand into the financial services networking marketplace.

## Cullinet airs 50% increase in revenues

WESTWOOD, Mass. — Cullinet Software, Inc. recently announced revenues for the third quarter ended Jan. 31 increased 50% over the corresponding period a year earlier, and profits increased 40% over the same period.

Sales for the three-month period were \$31.3 million, compared to \$20.9 million for the same period a year earlier. Profits for the quarter were \$4.2 million, or 28 cents per share, compared to \$3 million, or 21 cents per share, reported a year ago.

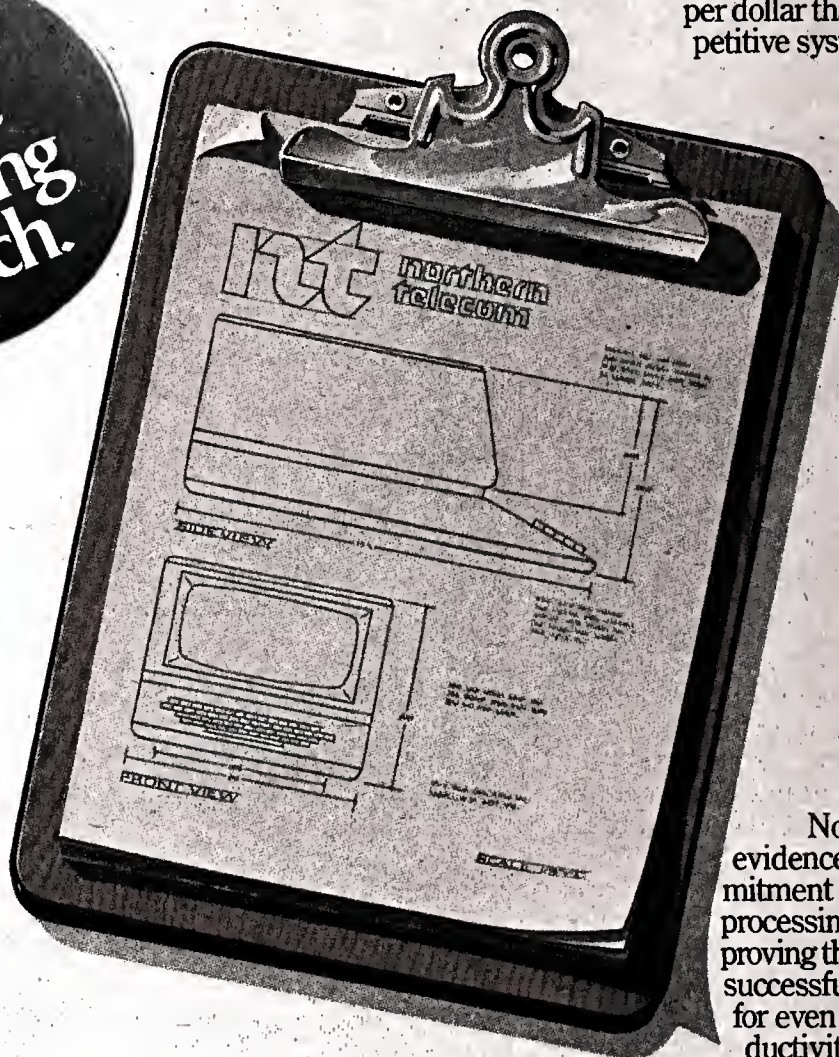
Cullinet reported that revenues for the nine months ended Jan. 31 were \$84.8 million, up 54% over the same period a year earlier, with profits for the same period rising 45% to \$11.6 million.

The company also reported that total costs and expenses were up 50.1% for the quarter and up 55% for the first nine months of fiscal year 1984, compared to year-earlier figures.

Cullinet earlier announced it had been awarded a \$2.2 million contract to provide software and maintenance for the \$350 million system integration project recently awarded by the U.S. Navy to Electronic Data Systems Corp. of Dallas.

Under that agreement, which reportedly involved multiple vendors in the largest benchmark test ever performed, Cullinet will provide the Navy with its IDMS data base management system for use with IBM 3081 and 4331 mainframes to integrate hardware, software and nationwide networks at each of two Navy supply centers.

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## COMPUTER INDUSTRY

## GSA's upcoming DP solicitation to exclude micro sales

By Andrew Mohr  
Special to CW†

The General Services Administration (GSA) will issue its Federal Supply Classifications Group 70, Section A schedule contract solicitation on or about March 6. In a change from past schedules, this solicitation will exclude the sale of microcomputer

hardware and software.

The solicitation, commonly called the Section A schedule, is GSA's general-purpose automated data processing equipment schedule contract. It provides for the purchase, rental and maintenance of DP system configurations, control devices, input/output and storage devices, optical

character recognition, analog/hybrid systems and software. The closing date for the submission of offers is April 11, 1984.

The Section A schedule is an indefinite quantity contract awarded to numerous manufacturers, distributors and dealers. GSA uses schedules to permit agencies to

buy commercially available items without the delay or expense entailed in conducting a formally advertised or negotiated procurement for each purchase.

To ensure the government receives a fair deal, GSA negotiates discounts from a vendor's commercial price list before awarding a sched-

ule to the vendor. Upon award, a schedule contractor may sell or rent its products to federal agencies and certain prime contractors working under government cost-reimbursement contracts.

GSA now manages two other DP equipment schedules in addition to the Section A schedule. These are the Section B schedule, which encompasses DP supplies and peripherals, and the newly established Section C schedule, which is devoted to micro hardware and software.

Confirming GSA's recent policy of segregating micro schedule procurement from mini and mainframe schedule procurement, GSA will exclude micro DP equipment from the Section A schedule. Micro equipment will be available only on the Section C schedule. Thus, vendors offering micro equipment in response to the Section A solicitation may have their offers rejected.

The exclusion of micros may cause problems because GSA's definition of micros remains unclear. The current Section C schedule contains equipment ranging from single-user portable computers to multiuser, multitask equipment capable of serving 64 users. GSA has indicated that DP equipment designed for an office environment will be considered to be micro equipment. However, objective criteria have not been promulgated.

Of major importance to mini and mainframe vendors, it appears that micros may continue to be sold under Section A as part of a mini or mainframe system. However, add-on sales of micros at system installations must apparently be made under the Section C schedule. This will force vendors to use both Sections A and C for serving system installations. In addition, this will result in the differing performance standards and maintenance provisions contained in Sections A and C being applied to the same type equipment at the same site.

The Section A schedule will continue to allow equipment rental. Since Section C does not provide rental, micro systems that must otherwise be sold under Section C may apparently be available for rental under Section A.

The March 6 opening date is the earliest GSA has issued the Section A schedule in years. While the early release of Section A will provide GSA more time to negotiate with bidders, it might surprise vendors expecting an April solicitation. ‡

Mohr practices at the law firm of Cohen & White in Washington, D.C., specializing in federal procurement and computer law.



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## COMPUTER INDUSTRY

# IBM/Stet talks spark rampant speculation

By Wilma Redis  
and Francesco Sammartino  
Special to CW

ROME — Speculation is rampant here about the possibility of a telecommunications partnership between the state-owned telecommunications organization, Stet (Società Finanziaria per le Telecomunicazioni), and IBM.

To date, both parties have held their cards close to their chests, but talks of a future collaboration on digital private telephone exchanges and data communication networks are still very much alive. Michele Principe, chief executive officer of Stet, and John Opel, chairman of IBM, reportedly reached some preliminary agreements during a recent meeting in Paris.

One of the most significant initial pacts concerns the potential establishment of a new Italian public network, known as Itapac, a packet-switching system that will eventually allow IBM's System Network Architecture (SNA) network to be directly accessed.

## No network modifications

The establishment of software compatibility between the Itapac network and IBM's SNA would enable IBM installations to be connected without any modifications to the Itapac network. This compatibility could represent a significant market advantage for both partners as well as considerable savings for their respective users, as there would be no need to invest in any new interface hardware.

Other points under negotiation include:

- That the Itapac network be

100% owned by SIP (Stet-owned telephone company).

- The establishment of an alliance between IBM and Italtel (Stet's telecommunications manufacturing company) on the distribution of private switching equipment.

- The sharing of IBM/Rolm Corp. telecommunications technology with Stet.

- The establishment of direct collaboration with SGS (Stet's semiconductor manufacturing company) and an additional agreement addressing the factory automation market.

While the potential partnership may eventually pay big dividends for

Stet and IBM, it could spell disaster for Italy's native company, Ing. C. Olivetti & Co. S.p.A.

Carlo de Benedetti, president of Olivetti, recently told the Italian Senate that the IBM-Stet partnership would yield negative results. He argued that the success of the Italian industrial system is contingent upon optimizing the use of national resources. Furthermore, agreements involving partners with huge technological disparity will compromise international competition, de Benedetti maintained.

Thus it remains to be seen who will be Stet's partner. After the

agreement between Olivetti and AT&T [CW, Jan. 9], many industry observers considered Stet in a weakened position, but now Stet is proving to be a most attractive telecommunications partner.

Will it be IBM or Italy's own Olivetti? While the possibility of a three-party partnership cannot be excluded, it is difficult to imagine Stet changing its present course. On the other hand, Olivetti represents the only European contender in the running.

*Redis and Sammartino are reporters at Computerworld Italia, based in Milan, Italy.*

## Honeywell, NCR to collaborate

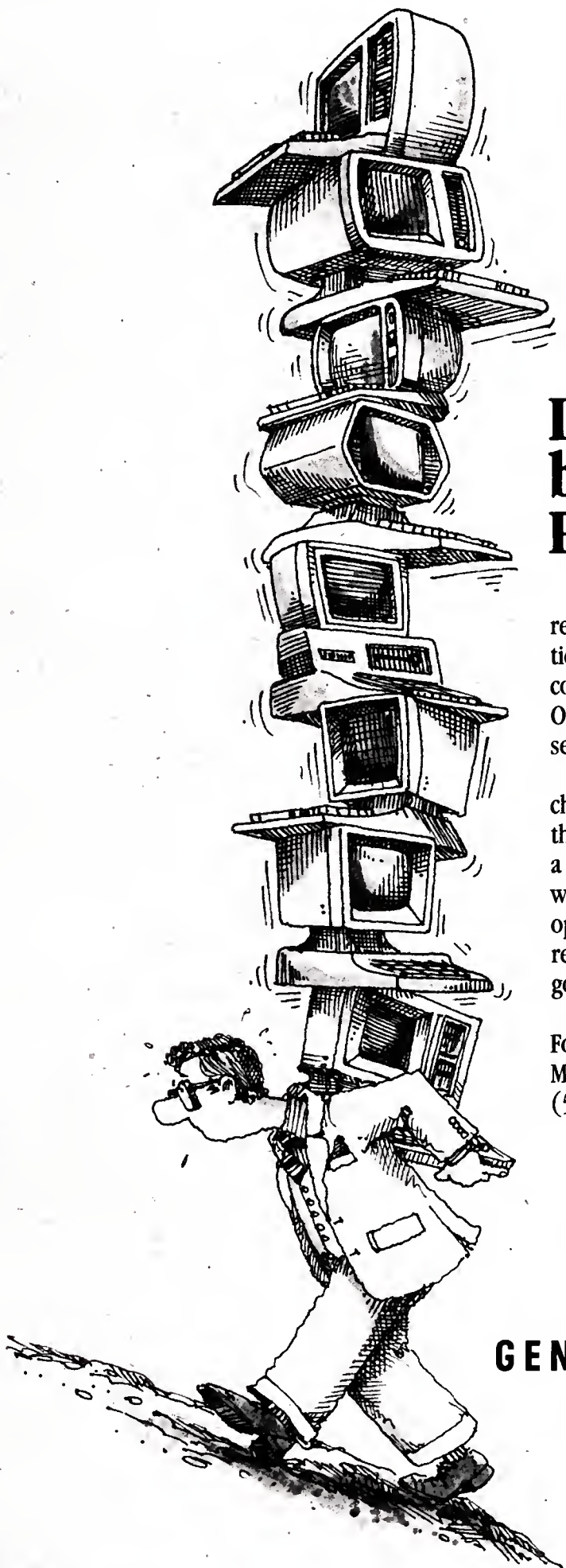
MINNEAPOLIS — Honeywell, Inc. and NCR Corp. recently announced an agreement for Honeywell to use NCR's 32-bit very large-scale integration processor chip set in the development of a planned computer system.

Additionally, the companies announced they will jointly develop a custom integrated circuit chip for use in the Honeywell system.

Honeywell said the planned system will be compatible with selected Honeywell products. James J. Renier, vice-chairman of Honeywell and president of the firm's information systems division, pointed out that the agreement "will enable us to bring new products with advanced 32-bit technology to our worldwide markets faster."

NCR's president and chief executive officer, Charles E. Exley Jr., said that the agreement with Honeywell is a milestone in efforts to market the NCR/32 chip. He stated that the chip will be manufactured at NCR's microelectronics facility, located in Colorado Springs, Colo.

NCR previously announced a computer system, the NCR 9300, built around the 32-bit chip set [CW, March 21].



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## COMPUTER INDUSTRY

# Storage sites reflect radical differences

## Locations vary from mine shafts to San Jose vaults

Two companies have radically different approaches to providing maximum security for their clients.

Secured Data Services, Inc. has one of the more unusual off-site storage sites for computer data. Located in an abandoned mine some 60 feet beneath the surface, the two-acre site, about 20 miles west of Dayton, Ohio, is buried under 60 to 80 feet of solid limestone.

The complex looks like something out of a James Bond movie with its high security gates, closed-circuit television and seven-inch-thick vault door. "We wanted a site that was as secure as we could make it and that was immune to natural and man-made problems," said Jim Valentine, the firm's president.

Having secured his site, Valentine added climate-control systems and brought in electricity.

"We didn't have to worry about water, since there is a well right above our heads. And being 60 feet beneath the surface, surrounded by thick limestone walls, you also don't have to worry about anyone breaking in through the rock," he noted.

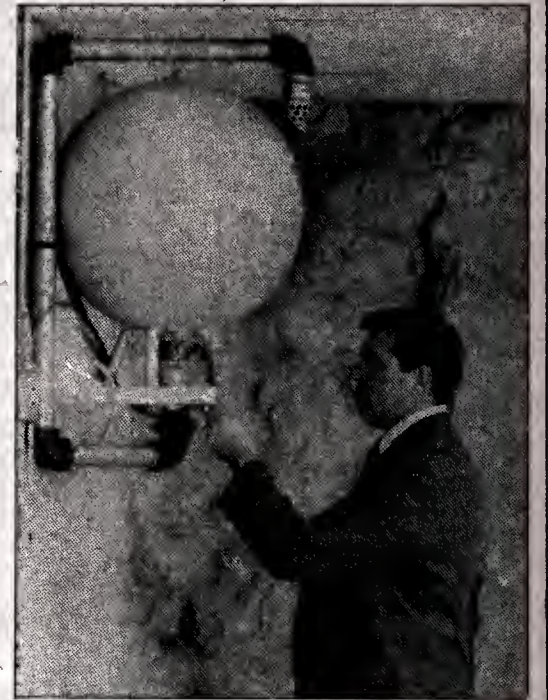
Located in San Jose in the heart of Silicon Valley, the National Safe Depository (NSD) facility takes on a quite ordinary appearance from the outside. "Our principal concern was to find a site that had good access to the main communication systems, that was not in a flood zone and at the same time was located in a good

earthquake-resistant area," said Donald Rickgauer, executive vice-president and facility manager.

Surveillance cameras monitor movements inside and outside the facility, while doors, windows and walls are covered with bullet-resistant panels. The outside structure is thick concrete block, while the inside consists of a steel bank vault that is larger than many homes.

NSD President Reg Weller sees those measures as essential to providing the protection that sensitive computer data requires.

"When the on-line computers at an airline go down, it can cost that company \$16,000 per minute and a big bank can lose up to \$60,000 per minute," he said.



Sam Huggins of Secured Data Services, Inc. inspects one of the fire prevention units in the firm's underground media storage facility.

## STORAGE from page 87

weekly or even daily basis.

The Vault Co. in Atlanta has one client with over 4,000 tapes stored at its facility. The Iron Mountain Group recorded 8,000 transactions a day in 1982, mostly in computer media.

The burgeoning nature of the data security business was further illustrated recently when Digital Equipment Corp. announced that it is making a major move into the records

management and off-site storage industry [CW, Feb. 13].

For many computer users, the most pressing need is to protect their data against unpredictable catastrophes, such as earthquakes (a particular fear in the Silicon Valley), floods, fires, tornadoes and hurricanes.

A recent study by the National Fire Protection Association estimated that 70% of companies suffering a major computer room fire will go out of business.

A number of recent cases have highlighted the risks involved in not having adequate protection:

■ Last August, Hurricane Alicia tore through several data processing sites in Galveston, Texas, inflicting heavy damage on the Galveston County data processing center and destroying its mainframe computer, which contained tax appraisals, payroll, accounts payable and jury selection for more than 200,000 people.

■ In May 1983, a toxic chemical

spill in a downtown San Francisco office building left several financial businesses without access to their records for 10 days.

In addition, publicized hacking incidents and computer theft cases have made many companies nervous. NSD recently reported the disappearance of its research and development tapes, which were stored on-site without any backup.

Such an incident could jeopardize the firm's future, NSD officials said.

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## Honeywell, Bridge ink net pact

PHOENIX — Honeywell, Inc. said recently it has agreed to integrate Bridge Communications, Inc.'s local-area network product with Honeywell's distributed computer systems.

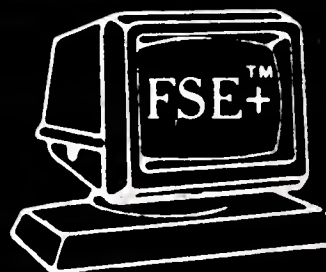
The initial product offering in the 10-year contract is a baseband, Ethernet local-area network, which will be introduced in the second quarter of 1984, Honeywell said.

Robert C. Hesser, Honeywell vice-president, said the agreement is a step toward providing customers

with systems designed to integrate and transfer data, communications, video and security.

"Our long-term strategy calls for integrating private branch exchange and local-area network controllers with the full range of Honeywell computers and network processors," Hesser said.

Communications servers covered under the agreement will reportedly allow processors, terminals and professional workstations to communicate via Ethernet.



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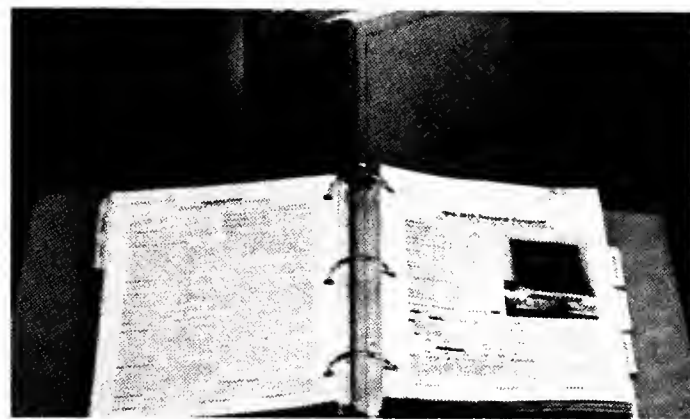
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## COMPUTER INDUSTRY

# Speaker cites changing legal aspects of DP

By Patricia Keefe  
CW Staff

NEWTON, Mass. — Advances in technology are creating a new kind of corporate arena where computer technology is being used as a sharp competitive weapon to create lasting damage to competitors quickly, according to a Harvard University Business School professor.

As a result, the legal aspects of the whole computing environment and the thrust of the issues that attorneys will have to deal with will be very different over the next 10 years from what they've had to worry about over the last 10 years, Profes-

sor F. Warren McFarland told lawyers attending the New England Computer Law Forum here last week.

McFarland told the lawyers that new technologies are:

■ Moving corporate technologies out of the "back room" and into the forefront of corporate strategic planning and execution where they will be key to a company's "ability to survive and compete."

■ Allowing companies to score greater competitive victories and creating potential for possible abuses (such as allegations that airlines that have computerized reservations systems are using them to execute un-

fair competitive practices).

■ Creating new regulatory issues and problems.

This has come about as a result of very short-term, but massive changes in the cost performance of technology, leading to the installation of applications that were unthinkable a few years ago, McFarland said. A shift in the actual performance of technology has occurred, he explained, involving a combination of data processing, teleprocessing, remote office support devices and microcomputer technology. Labeling the integration of these four parts as an interorganization information

system, he pointed out that this has provided corporations with the ability to link their computer to those of their customers and suppliers, allowing them to manage their business relationships in very different ways.

Integral to these systems is teleprocessing capability, or electronic links which essentially facilitate "raw transfers of power changing the fundamental nature of relationships," he said.

Corporate planners will be looking at their information systems technology to determine any strategic uses, McFarland said. Defining the "generic" competitive strategy as one with low cost, product differentiation and market focus, he said that in 1984, the strategic questions are:

■ Can the strategy create definitive entry barriers?

■ Can it strengthen the customer relationship by increasing switching costs, for example?

■ Can it change the intra-industry competitive balance?

■ Can it change the basis of competition from low cost to product differentiation?

■ Can it change the nature of supplier relationship, for example, make the supplier carry the inventory cost instead of the company?

## Paradyne posts profits decline

LARGO, Fla. — Paradyne Corp. recently reported profits for the fiscal year ended Dec. 31 were down 86.4% compared to the previous year and that the company lost \$1.7 million, or 8 cents per share, during the fourth quarter of 1983.

For the year, Paradyne posted profits of \$3.6 million, or 16 cents per share, compared to \$26.8 million, or \$1.24 per share, in 1982. During 1983, revenues increased by \$1.6 million to \$207.3 million, just 0.78% ahead of 1982 results.

During the fourth quarter, Paradyne experienced a decline in revenues to \$55.3 million, compared to \$61.4 million in the comparable quarter of 1982, when the company posted profits of \$7.4 million, or 33 cents per share.

The company reported that legal fees and costs paid to outside counsel were \$500,000 in the fourth quarter and totaled \$2.5 million for the year. Those payments reflect substantial costs incurred in defending an action brought against the company by the Securities and Exchange Commission, as well as some subsequently filed private actions and collateral matters, the company said.

Fourth-quarter expenses were increased by approximately \$1 million, resulting from strengthening the firm's marketing organization, and an additional \$800,000 was paid out in commissions as a result of increased sales activity, according to Paradyne. Profit margins in the fourth quarter were said to be affected by costs associated with the start-up and shipment of a new line of modems and networking diagnostic equipment.



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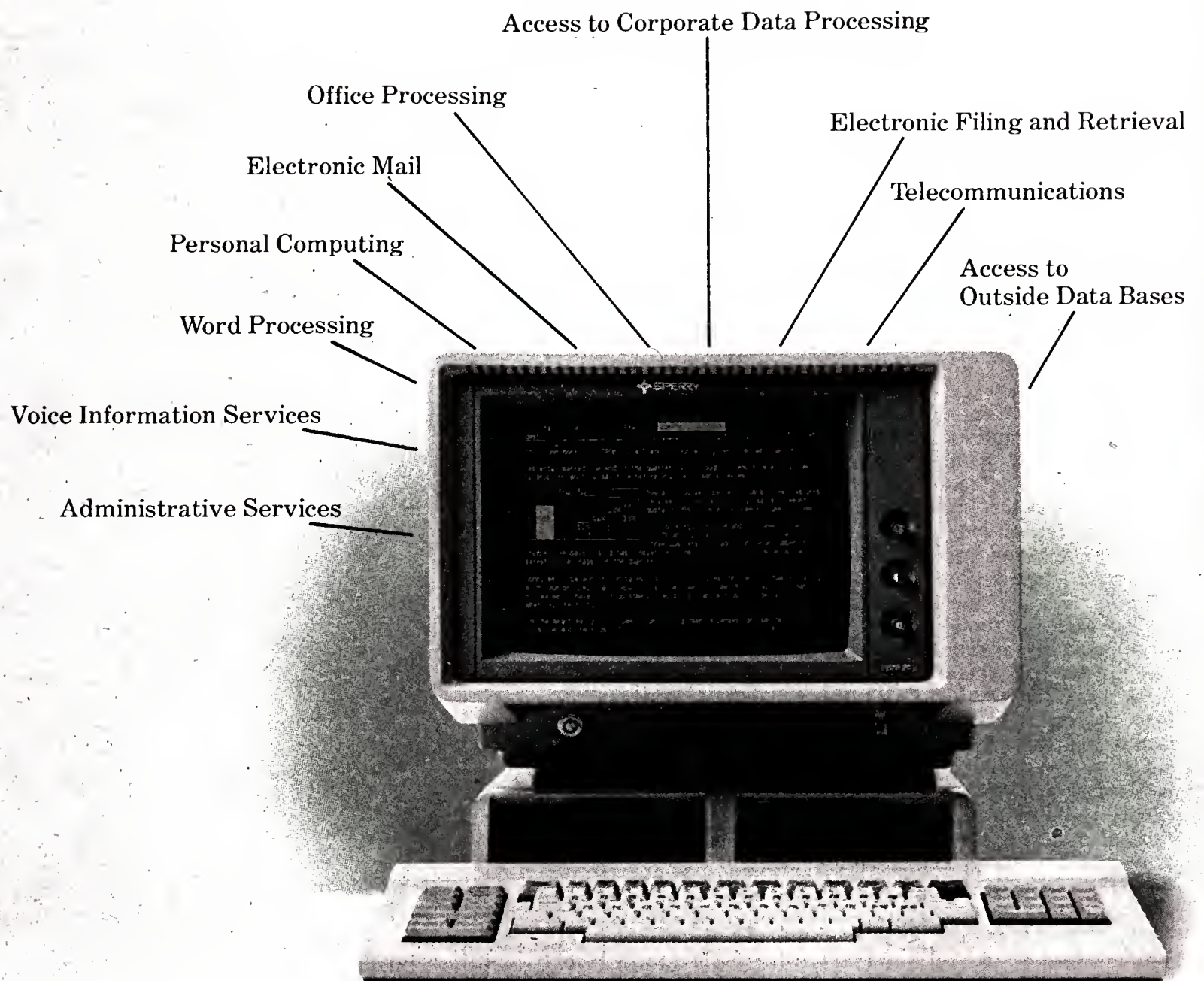
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## COMPUTER INDUSTRY

# DEC, Pittsburgh Univ. renew R&D pact for VMS

By Tom Neudecker  
Special to CW

PITTSBURGH — The University of Pittsburgh and Digital Equipment Corp. recently announced that the university will develop enhancements for the VMS operating system used on the VAX-11 series.

Under the terms of a renewed research and development relationship, the university will develop technology to allow VMS-based VAX-

11 superminicomputers to communicate with other equipment using Bell Laboratories' Unix operating system, officials said. The university products will be the property of AT&T, but should help establish VMS as a compatible operating system for large networks marketed by AT&T, school officials added.

The university also will research and provide technical expertise on network maintenance and develop computer-assisted instruction software.

Winston Hindle, DEC senior vice-president, said that in exchange for this work, "Pitt will be able to pur-

chase products at a substantial, very substantial, discount." Pitt Chancellor Wesley Posvar said that "up to \$8 million worth of products from the entire DEC line will be acquired during the next three years, with special emphasis on the VAX hardware architecture."

The agreement follows by two months the Pitt-AT&T announcement of the development of a fiber optics communications network at the university. This network will provide a transportation system for voice, video and data communications for the 60-building, 131-acre campus and Pitt's regional campuses.

This network will feature special communication gateways that will permit heterogeneous micros and minis to exchange data.

The Pitt-DEC agreement is an extension of a 13-year relationship between the parties. During the course of this relationship, Pitt contributed to the development of the Tops-10 operating system and the use of multiple Tri-Processors. To date, Pitt has purchased \$15 million worth of DEC equipment. The university may also become a showcase for the future VAX "Venus" line and possibly for a 32-bit DEC microprocessor which is under development.

## Syracuse gets advanced tech designation

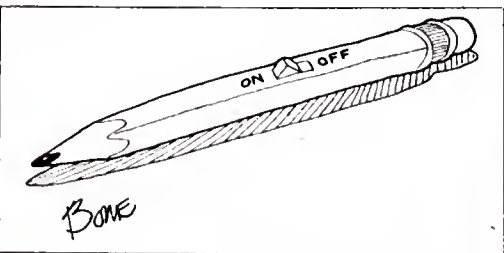
SYRACUSE, N.Y. — Syracuse University was recently designated as a state- and industry-sponsored "Center for Advanced Technology" focusing on computer applications and software engineering, with major funding provided by IBM, General Electric Co. and United Technologies Corp.

The Case Center, one of seven state/government-funded technology centers around the state, is comprised of a consortium of 14 upstate New York private and public educational institutions; it has received commitments of more than \$1.5 million in funds from its three major corporate backers and six other corporate sponsors. Designated under a state statute by the New York State Science and Technology Foundation, the center is immediately eligible for \$135,000 in matching state funds through April 1 and for \$1 million in matching state funds requested by Gov. Mario Cuomo for the fiscal year beginning April 1, according to a spokesman for the center.

Bradley J. Strait, formerly dean of Syracuse's L.C. Smith College of Engineering, resigned that position to become managing director of the center. More than 30 Syracuse faculty members and as many as 100 students are expected to participate in research projects at the center during its first year of operation, the spokesman said.

Projects will reportedly focus on three main areas: computer-enhanced reasoning, including expert systems and high-level programming languages; computer tools research, focusing on tools for hardware and software design and tools for increasing productivity; and cross-disciplinary research on the application of computer technology in various fields.

Various support facilities will be initiated, including laboratories for multiuser microprocessor development, very large-scale integration design, robotics and others, the spokesman said.



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## COMPUTER INDUSTRY

# Opel criticizes national industrial policy proposal

PHILADELPHIA — John Opel, chairman of IBM, recently spoke out against proposals for a U.S. national industrial policy and said efforts should be directed at reducing the increasing federal budget deficits and dealing with unemployment, productivity and educational issues.

"The argument for a national industrial policy not only originates in an assertion of a problem that we do not have — the problem of massive dehumanization — it also fails to confront the genuine problems we do have," problems with deficits, productivity, unemployment and education, Opel said at the University of Pennsylvania.

Advocates of a national industrial policy would create a tripartite national industrial policy board with power to intervene in the economy and a national development bank with remedial plans to protect declining industries.

#### Four assertions

Opel disagreed with four assertions that the advocates make: the U.S. is deindustrializing; its market system cannot meet subsidized world competition; deindustrialization is causing mass unemployment; and the technical revolution will leave workers as technical wizards or unemployed.

"There are four problems crucial to our economic health and competitiveness: deficits, inadequate productivity growth, hard-core unemployment and a deterioration in our educational system," according to Opel.

To solve the problems of deficits and inadequate productivity growth, he urged that the federal deficit be cut, foreign trading partners open their markets, companies strive to be low-cost producers and tax reform be implemented to encourage saving and capital investments.

Opel categorized unemployed workers into two groups: displaced and disadvantaged. He recommended

government incentives for individuals who move to areas of industrial growth and companies that move to disadvantaged areas. Disadvantaged workers must become functionally literate and acquire marketable skills, he said.

"Finally, we must overhaul our obsolescent school system and restore its capacity to produce graduates who can, at a minimum, do math and read and write English," Opel maintained.



#### MERGERS AND ACQUISITIONS

AGS Computers, Inc. has announced its acquisition of Software Design Associates, Inc. for \$12.7 million. The acquisition will see Software Design's management continuing in its present capacity. A privately held company, Software Design generated \$20 million in revenues last year, compared with AGS' \$143 million.

David C. Evans, president and chief executive officer of Evans and Sutherland Computer Corp., a Salt Lake City-based special-purpose computer manufacturer, has announced that the company has invested \$3 million for a controlling interest in Cardamotion, Inc., of Boulder, Colo., a producer of customizable software for computer-aided design.

Grumman Data Systems Corp. has agreed to acquire Ctec, Inc., a McLean, Va. computer software and systems engineering firm. Terms of the cash sale were not available.

Esprit Systems, Inc., Melville, N.Y., has announced an agreement in principle to acquire Percom Data Corp. of Dallas, a manufacturer of hardware and software for local-area networks.

Control Data Corp. has acquired one million shares of preferred stock, convertible into 40% of the common stock of Financial Information Systems, Inc. In addition, CDC will make available a line of credit of up to \$1 million to Financial Information Systems.

Online Computer Library Center (OCLC) has acquired Avatar Systems, Inc. of Potomac, Md. Avatar will become a subsidiary of OCLC known as the OCLC Washington Office.



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## COMPUTER INDUSTRY



## EXECUTIVE CORNER

**David L. Dodge** has been promoted to president of Dataserv Equipment, Inc.

**Gundor Rentsch** has been named president of Ericsson Communications. He recently served as vice-president of the Business Systems Divi-

sion, an Ericsson Information subsidiary based in Sweden.

**Charles A. Mathews**, formerly a senior executive with Britain's Plessey Group, has joined Cipher Data Products, Inc. as president, chief operating officer and member of the board of directors.

**Gary E. Sharpe** has been appointed president and chief executive officer of Delphax Systems of Toronto.

**David S. Krueger** has been appointed president and chief executive officer at Three Phoenix Co.

**Joseph W. Karoly** has been elected president of RCA Cylix Communications Network, Inc. He had been vice-president of finance for RCA Communications, Inc.

**Ronald P. Bernier**, former vice-president of domestic field operations for Tymnet,

Inc., a subsidiary of Tymshare, Inc., has been named president and chief executive officer of Health Systems International.

**John Thomas** has been named president of Telecom Plus of Florida, a unit of Telecom Plus International, Inc.

**Jay Callanan** has been promoted to president of Information Unlimited Software (IUS), the micro soft-

ware division of Computer Associates International, Inc. Also promoted at IUS were **Mark Farnell**, senior vice-president, marketing and sales; **Richard Bond**, vice-president, sales; and **Sharon Anderson**, vice-president, customer services and training.

**Lewis A. Bergins** has been promoted to senior vice-president of operations at Microcom, Inc.

**Northern Telecom, Inc.** has appointed three new vice-presidents and general managers. They are **W.J. Viviano**, Cook Electric Division; **A.G. Lutz**, DMS-100/200 Division; and **Paul Warun**, Data Test Systems Division.

**P. Michael Seashols**, former senior vice-president for Exo Systems Corp., has joined Oracle Corp. as vice-president, marketing and sales.

**Lawrence M. DeVore** has been appointed vice-president, law and administration, at Communications Satellite Corp.'s Comsat World Systems Division.

**Michael L. Grubin** has been appointed vice-president, corporate development, and **Nick Lomuto** has been named vice-president, product research and development, at Alsyst, Inc.

**William J. Sanger** has been named vice-president of sales for Facit, Inc.'s Data Products Division.

**John C. Kingery** has been appointed senior vice-president, finance, at Raytheon Data Systems, a division of the Raytheon Co.

**Thomas W. Miller** has been promoted to executive vice-president, corporate marketing, at Control Data Corp.

**Peter T. Garahan** has been appointed vice-president, finance, and chief financial officer of Sage Systems, Inc.

**Merle H. Banta** has been elected president, chairman of the board and chief executive officer of AM International, Inc. The company is currently operating in a Chapter 11 proceeding.

**Ronald W. Braniff** has been appointed president of Ask Computer Systems, Inc. **Sandra Kurtzig**, founder and former president of Ask, continues as chief executive officer and chairman of the board.

**Gale R. Aguilar** has been appointed vice-president, corporate development and strategy at Prime Computer, Inc.

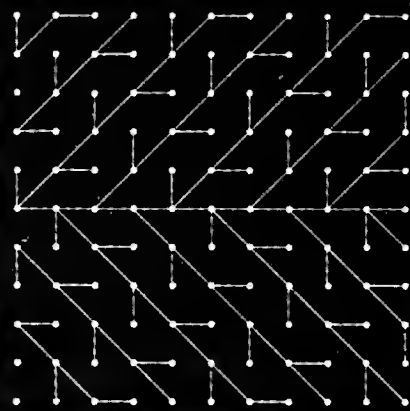
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## COMPUTER INDUSTRY



## SUPERSHORTS

**Technology and Business Communications, Inc.** has announced the third edition of *The S. Klein Directory of Computer Graphics Suppliers: Hardware, Software, Systems and Services*. The directory identifies more than

500 supply sources and contains basic product information and business background on each company, including ownership, company size and sales volume. The directory sells for \$60, with a special prepublication price of \$47 prior to April 20 (prepaid). More information is available from Directory Manager, Computer Graphics Suppliers, Third Edition, 730 Boston Post Road, P.O. Box

89, Sudbury, Mass. 01776.

**Contel Mobilcom, Inc.**, a newly formed subsidiary of **Continental Telecom, Inc.**, has reached agreement with 22 other telephone companies to provide cellular mobile telephone services in several U.S. cities through partnership arrangements. Following Federal Communications Commission approval, Contel Mobilcom will be the controlling general partner in limited partnerships that will provide the service in Norfolk and Richmond, Va.; Mobile, Ala.; Fresno, Calif.; and El Paso, Texas.

**3R Computers, Inc.**, manufacturers of Avatar univer-

sal terminal converters and PA1000 protocol converters, has changed its name to **Avatar Technologies, Inc.** The firm has also moved to larger quarters at 99 South St., Hopkinton, Mass. 01748.

**Hewlett-Packard Co.** and **Esvel, Inc.** have signed a research and development contract aimed at developing data base software for HP computers.

**Applied Digital Data Systems, Inc.** (Addis) has acquired the Autograph X series of graphics terminals from **Datatype, Inc.** of Mountain View, Calif. Addis' Display Product Division will have responsibility for the

new product line.

Five schools in each of 26 school districts, including 23 districts with the largest enrollments in the country, will receive up to 15 IBM Personal Computers or PCjr systems and accompanying software as part of a \$12 million computer literacy program recently announced by IBM. The program follows a similar program established by IBM last year in 89 secondary schools in California, Florida and New York. The expanded program will include elementary and secondary schools and will provide training courses for teachers involved in the program.

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## ROBOTS from page 89

spection after assembly, and plant capacity is limited by availability of trained labor. The new company estimates that, by 1985, demand for hard disks will grow to 12 million units, and typical plant output will have to skyrocket from 600 to 5,000 units per day to meet it. This means that only automated manufacturers will be able to compete profitably. Autobotics is clearly targeting that particular electronic assembly market.

Intellidex is a 1981 start-up which developed an integrated-vision robot designed for assembling microelectronics components such as magnetic disk-reading heads and silicon wafers. This company already received \$5.25 million in two rounds of venture capital financing from the top high-technology investment banking firm of Hambrecht & Quist. Intellidex is estimating sales of about \$2 million in 1983 and is clearly shaping up as the next robotics firm that may go public.

Automatix, Inc., which went public last March, has increased its revenues by over 100% during the third quarter of this year and is clearly another robotics firm of interest to the institutional investors who are rapidly acquiring its shares for their portfolios and who already own 12% of the outstanding stock. The company produces robot systems with vision although it does not confine its market to electronic assembly applications. Ob-

ject Recognition Systems and Robotic Vision Systems are two other public companies with vision-equipped robots that may also compete in the electronic markets.

Anorad, Control Automation, Microbot and Precision Robots are some of the still-private firms developing robots aimed at electronic components handling that are competing in this game, but the most interesting competitors are within the electronics industry itself.

IBM, already in factory

automation robotics, presents a huge potential. Lesser known but also important in the industry is GCA Corp., which is a major semiconductor manufacturing equipment producer already developing specialized robots for the industry. But not to worry. Even if some of the newcomers do not make it on their own, they're bound to be snapped up by the big electronics firms once they start automating their operations to keep up with the fast-stepping Japanese.

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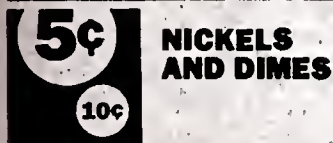
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# COMPUTER INDUSTRY



**Endata, Inc.** has reported revenues for 1983 of \$36.4 million, compared with \$31.9 million for 1982, and net income of \$2.3 million, or 60 cents per share, up 53.2% over 1982's net income.

**Timeplex, Inc.** has announced revised earnings of 17 cents per share for the second quarter of fiscal 1984 ended Dec. 31, a reduction of 1 cent per share from the figure announced on Jan. 17. According to the company, the change was due to an error in computing the per-share figures.

**Columbia Data Products, Inc.** announced that net sales for the fourth quarter rose to \$30.4 million compared to \$4.3 million last year. Net income increased to \$2.5 million or 21 cents per share for the period, compared to \$374,000, or 4 cents per share, in the fourth quarter of 1982. Full-year 1983 net sales increased to \$56.2 million from \$9.4 million last year. Net income rose to \$3.6 million, or 32 cents per share, compared to \$269,000, or three cents per share, in the prior year.

**Wyly Corp.**, whose principal operating subsidiary is University Computing Co., has reported revenues of \$152.9 million up from \$140.5 million in 1982. Income was \$190,000, or 1 cent per share, compared with \$4.1 million, or 30 cents per share, for 1982. According to the company, the increase is from its software operations in December.

**Eagle Computer, Inc.** has announced sales for the second quarter of fiscal 1984 of \$19.1 million, a 34% increase over the prior quarter and a 300% increase in sales over second quarter fiscal 1983. Net earnings for

## Tymshare posts net loss for '83

CUPERTINO, Calif. — Tymshare, Inc. recently reported a net loss in fiscal year 1983 of \$1.5 million, or 13 cents per share, reduced by favorable tax benefits from a total loss for the year of \$6.6 million. The previous fiscal year, the company had posted profits of \$8.8 million, or 73 cents per share.

During the fourth quarter, the company experienced a loss of \$3.5 million that was reduced by tax benefits to a net loss of \$1.4 million, or 12 cents per share. In the corresponding period of fiscal year 1982, the company had experienced a total loss of \$6 million, reduced by tax benefits to a net loss of \$2.3 million, or 19 cents per share.

Revenues for the just-ended fiscal year were down 3% from the previous year to \$288.6 million. For the fourth quarter, revenues were up 9% over the year-earlier figure to \$71.4 million. However, during 1983 the company divested its medical services and bank card processing businesses, which if accounted in 1982 would have produced comparable revenues of \$271 million.

the quarter were \$457,000, compared with \$81,000 for the prior quarter and \$17,000 for second quarter fiscal 1983.

**Computervision Corp.** has reported fourth-quarter revenues of \$111 million and net income of \$10.4 million, up 37% and 45%, respectively, from fourth quarter last year. Revenues for the year rose to \$400 million from \$325.2 million in 1982. Net income in 1983 was \$35.3 million, or \$1.24 per share, compared with \$32.4 million, or \$1.18 per share, for 1982.

**Informatics General Corp.** has reported revenues of \$197.9 million and net income of \$8.5 million, or \$1.67 per share, for fiscal year 1983, compared with revenues of \$170 mil-

lion and net income of \$5.4 million, or \$1.49 per share, for 1982.

**Communications Corp. of America** has reported a net loss of \$462,902, or 11 cents per share, on revenues of \$16.8 million compared with net income of \$496,137, or 14 cents per share, for the comparable period last year. The six months ended Dec. 31 showed a net loss of \$849,113, or 20 cents per share, on revenues of \$33.1 million, compared with net income of \$906,342, or 27 cents per share, on revenues of \$26.9 million for the same period last year.

**Syntrex, Inc.** has reported revenues of \$11 million for the first quarter of fiscal 1984, a 61% increase over the comparable period in fiscal 1983. Net income for the period was

\$1 million, or 12 cents per share, compared with a \$799,338, or 9 cents per share, loss for the first period last year.

**Phoenix American, Inc.**, a financial services company, which organizes and manages computer leasing limited partnerships, has reported revenues for the second quarter, ended Dec. 31, of \$8.5 million, a 40% increase over the same period last year. Net income for the quarter was \$2.1 million, or 25 cents per share, up 41% over the comparable quarter from last year.

**Tandon Corp.** has reported sales of \$93 million and earnings of \$9.3 million for first quarter, fiscal 1984, up 71% and 63%, respectively, over the comparable period last year.

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Current & Future Developments

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System Failure  
Media Failure

##### Integrity

Integrity Rules and Actions  
Primary and Foreign Keys

##### Concurrency

Serializability  
Two-phase Locking  
Timestamping

##### Security

Authorization Rules and Actions

Statistical Databases  
Data Encryption

##### Database Design

Synthesis vs. Analysis  
Entity Classification  
Primary and Foreign Keys  
Recipes

The Design Procedure—  
A Checklist

##### Distributed Database

Location and Replication  
Transparency  
Query and Update Processing

##### Concurrency Control

Crash Recovery

##### Database Machines

Dedicated Backend Machines  
Associative Disks

##### Data Models in Depth

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## COMPUTER INDUSTRY

**KRAUT** from page 87

service organization and say, 'Hey, you guys take a look at the line and the modems and the terminals and you fix the problem.'"

Competing with established third-party maintenance companies such as Sorbus, Inc. and TRW Corp., Honeywell "is on the fringes of the top six" and believes it can grow in that area based on "a proven field force with a national logistics organization," Kraut said, adding that Digital Equipment Corp. and NCR Corp. have made similar but more limited efforts to enter the field.

Honeywell is attempting to capitalize on the organization it built to service Honeywell equipment, including 250 offices, more than 1,000 points of supply for parts and a force

of some 2,200 service engineers throughout the U.S. and abroad.

The company last year implemented a Remote Support Facility in Atlanta, through which engineers at Technical Assistance Centers here in Newton and in Phoenix may dial into customer systems and remotely diagnose problems.

Those facilities are provided to customers with Honeywell and non-Honeywell equipment through a Totalcare Third-Party Service program that can include training, on-site support, remote support and other services tailored to a customer's needs, Kraut said.

That service reflects the relative increased expense of sending engineers out on service calls while hardware costs in general are declining. "An hour's worth of travel time is

worth an hour's worth of maintenance," Kraut said.

While the company is "more oriented to the business world than to the home market," Honeywell recently announced an agreement to provide warranty and nonwarranty service to buyers of Coleco Industries, Inc.'s Adam home computer system and is planning to open by the end of the present quarter a total of 35 walk-in service centers to provide service to customers of Coleco and other vendors.

Kraut said the refocused service effort is managed by a team of entrepreneurs who are encouraged to take risks.

Currently, existing resources are being utilized, but "as they grow the business and need more resources they will get them," he said.

**IBM** from page 87

System/36, current System/36 and System/38, he said.

"One of IBM's great preoccupations in the small business world is to lock people into a migration path," Jeffery said, and the announcement of a System/34-compatible micro would go a long way toward satisfying that objective.

Word of an impending Personal Computer/34 introduction has also reached Chris Herron, president of Fusion Products International, Inc., a Larkspur, Calif.-based supplier of productivity enhancement software packages for IBM's small business systems.

**'Real hummer'**

"Everything that we've heard thus far about [the theorized micro] leads us to believe that it's going to be a real hummer," Herron said.

"It's supposedly going to be source-level compatible with the System/34, will probably come with a hard disk module and is expected to replace the entire bottom end of the System/34 product line," he said.

Moreover, he added, "the PC/34 is definitely going to happen and will be announced momentarily, probably during the first or second quarter of this year."

**Different view**

Not everyone, however, shares Herron's confidence. "I'd be very surprised if IBM introduced a Personal Computer that runs System/34 software," David Stein, Gartner Group, Inc. cofounder and executive vice-president, said recently during a telephone interview.

"The company would probably be very careful not to announce a low-cost System/34-like product until it had persuaded most of its customers to move upward to the System/36," he said.

On the other hand, Stein does concede the possibility that IBM may be planning soon to add an entry-level model to its System/36 processor line.

"I haven't heard any rumors as such about an upcoming System/36 announcement," he said.

But a low-end extension to that product line would be in full accord with IBM's long-term hardware strategy, which is "to migrate current users of the System/34 to the System/36 and ultimately to the System/38," he added.

**Upward move**

Another industry observer, Minneapolis-based computing consultant Tom Teresi, foresees the near-term future of the System/36 series somewhat differently from Stein.

"I don't see how IBM could make the product line much smaller [than it is right now] without crippling its performance," the president of Tom Teresi, Inc. said recently over the phone.

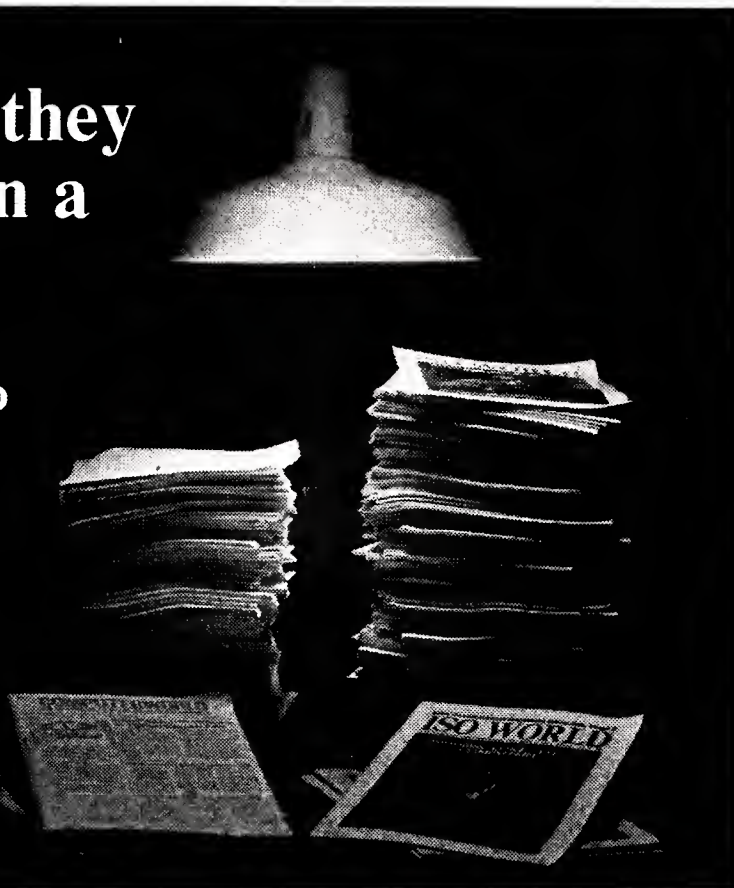
"The System/36 already overlaps the System/34 in both power and capacity," he said.

Rather than extend the System/36 downward, IBM is likely to move its Personal Computer family upward with the introduction of a multiuser micro that outperforms the Personal Computer XT, he said.

In addition to his full-time consulting work, Teresi serves as System/36 project leader for IBM's Chicago-based Common Users' group.

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First Delaware Services (subsidiary of First Maryland Bancorp), a diversified financial service computer support group, began its operations in Millsboro, Delaware three years ago. We're pleased with this location, just 20 minutes from the Southern Delaware shoreline for many reasons. Among them are the variety of affordable lifestyles and recreational opportunities and increased purchasing power due to no state sales tax!

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**SYSTEMS ANALYST**

Minimum of 5 years experience in an IBM shop. The successful candidate must possess excellent verbal and written communication skills and be experienced in project planning and control analysis on large scale IBM systems. Proficiency in flow charting, writing program specification and directing user/technical personnel on all levels required. CICS, IMS, TSO, SPF experience is preferred.

**SENIOR PROGRAMMER/ANALYST**

Requires minimum of 4 years COBOL programming on large scale IBM systems. Proficiency in problem resolution, JCL creation, and debugging techniques required. Must be knowledgeable in sub-system design and specification writing.

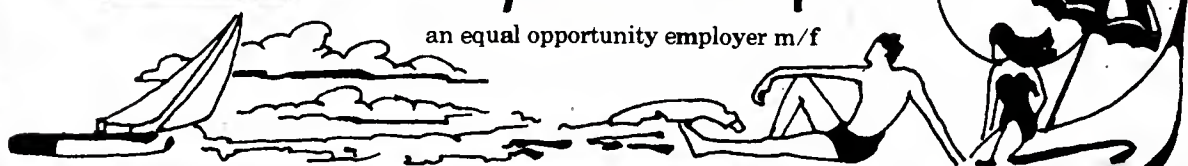
**COMPUTER OPERATORS**

2-3 years experience on a 3083 IBM OS MVS operating system. Some JCL experience preferred. Minimum 2 years college required.

We believe that time off should be relaxing and work-time should be rewarding. If you share this philosophy, you will fully enjoy the projects and the location. LET'S TALK! Call or send resume to D. Jill Connolly, P.O. Box 1596, Baltimore, MD 21203. Phone: (301) 244-4941

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Gould, Inc. Computer Systems Division is an international leader in the real-time scientific super-minicomputer market. We are currently seeking a Systems Analyst to perform post-sales activities in our Santa Clara Office.

The ideal candidate will have a solid working knowledge of Convergent Technology hardware, including the systems architecture and operating system. Must be proficient in BASIC and FORTRAN. Knowledge of UNIX\* highly desirable.

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Computer Systems Division  
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\*UNIX is a trademark of Bell Laboratories.

Wilsonville, Oregon. Microcomputer software engineer to design and implement advanced software for new generation microcomputers. Must possess MS in computer science with emphasis in compiler/assembler design; working knowledge of PASCAL; limited experience in C, 8080 and/or 8086 languages; experience with microcomputers; general knowledge of computer architecture, data structures, algorithms and DBMS. Individual develops detail specifications and implements shell kernel program; adapts shell kernel to run under various microcomputer operating systems; prepares detail design, develops algorithms and implements design via programming; also performs maintenance of system software and develops and executes tests to insure software conformity with specifications. 40 hrs/week with overtime as necessary. Salary: \$27,000. Send resume to: Employment Division, Attn: Job Order 1917036; 875 Union Street NE, Salem, OR 97311.

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EOE M/F/H

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Employment Section Chief

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POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS
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Purdue University School  
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at Indianapolis**

An opening in the Computer Technology Department at Indiana University-Purdue University at Indianapolis (IUPUI) is available August, 1984. Applicants must have a strong background in IBM hardware, with particular expertise in systems analysis and systems design or computer operating systems. Business or industrial experience, teaching experience, and a minimum of a master's degree are required. Rank and salary dependent on qualifications.

Please send resume by March 19, 1984 to:  
Dr. Robert Crozier, Chairman  
Search and Screen Committee  
Indiana University-Purdue University  
at Indianapolis  
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1201 E. 38th Street  
Indianapolis, Indiana 46223  
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Quality Assurance Analyst**

Participate in the development of a quality assurance function at Federal Express. Will include such areas as: change control, system test, monitoring of standards and procedures, implementation of a structured methodology and system design reviews.

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## DP OPPORTUNITIES

The Kansas City Star/Times publishes the sole area-wide daily newspaper serving the general metropolitan population of 1.4 million. The Kansas City Star DP department seeks added staff to support current operations using three DEC KL10/TOPS 10 systems and the Software House 1022 DBMS. Normal staff growth opportunities will be enhanced by the planned gradual introduction of new systems to keep abreast of technology.

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### DATA BASE ANALYST

Requires BS with 3 years experience in DB management systems, business applications, transaction analysis, and structured design analysis and tools such as data flow diagrams and data dictionaries. Applied job skills will include logical data analysis and normalization, data modeling, security and control, file access methods, and performance tuning.

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Requires BS or equivalent with 4 years experience in hardware-software evaluations, assembly language programming, analysis, diagnostic tests and development of applications programming aids. Applied job skills will include systems studies, selection and design of hardware-software systems to meet current and future needs, and work with the applications and computer center staffs on efficiency and systems.

Send Resume and letter detailing current responsibilities and salary history to Data Processing Director, Kansas City Star/Times, 1729 Grand Avenue, Kansas City, MO 64108.

## THE KANSAS CITY STAR. The Kansas City Times

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#### OPPORTUNITIES FOR CHALLENGING POSITIONS IN COMPUTER SCIENCE AND TECHNOLOGY

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The System Components Division of the Institute for Computer Sciences and Technology at the National Bureau of Standards is seeking GS-12, 13, 14 and 15 Computer Scientists and Electrical Engineers to perform research and advanced development on multiprocessing computer systems, speech recognition, data encryption for computer security, and optical digital data disk/high density magnetic recording. Successful applicants must possess an in-depth knowledge and familiarity with one or more of the following technological areas:

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Theoretical and applied computer science and technology with emphasis on computer architecture, multiprocessing systems, or parallel processing.

##### SPEECH RECOGNITION

Theoretical and applied pattern recognition technology with emphasis on acoustics, phonetics, and artificial intelligence algorithms and languages.

##### DATA ENCRYPTION FOR COMPUTER SECURITY

Theoretical and applied computer science, data communications, mathematics, cryptographic algorithms, and computer security analysis problem definition.

##### OPTICAL DIGITAL DATA DISK/HIGH DENSITY MAGNETIC RECORDING

Theoretical and applied optical and magnetic technology with emphasis on computer mass storage, system architecture, or dynamic test and measurement techniques.

These positions range from the GS-12 to GS-15 grade levels depending upon qualifications and experience and offer competitive salary, excellent career benefits and professional growth opportunities. Please send your Personal Qualifications Statement (SF-171) to:

U.S. Department of Commerce  
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Washington, D.C. 20234

Attn: Ms. Josephine White (C2837)

The National Bureau of Standards is located in modern facilities in Gaithersburg, Maryland and is an EQUAL EMPLOYMENT AFFIRMATIVE ACTION Employer. U.S. Citizenship is required.

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### Systems Programmer II

The University of Alaska Computer Network (UACN)

The UACN provides the statewide University of Alaska system academic and administrative computing and data communication services. The Systems Programmer II provides technical support for computer operating systems, related software and program maintenance. In addition this post is responsible for software systems development and the maintenance/modification of accounting software, utilities, language translators, and standard software packages. As a minimum the successful applicant must possess a knowledge of computer systems and software, skills in Assembly language level programming, and the ability to maintain, develop, and install computer operating systems.

The position is based in Fairbanks, Alaska and will report to the Systems Programming Manager. The salary range begins at \$42,764 DOE. Application letters, together with resume and at least 3 professional references, must be postmarked by March 30, 1984 and sent to:

Statewide Office of Human Resource Development  
University of Alaska  
303 Tanana Drive, Room 1 Bunnell Building  
Fairbanks, Alaska 99701

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## High Tech '84 Opportunities

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For direct, confidential access to our national client network, call or send resume to Karyn Davis at our Fox-Morris corporate headquarters:

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#### Bryant Bureau

DP Division

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Wilsonville, Oregon. Microcomputer software engineer to design and implement advanced software for new generation microcomputers. Must possess MS in computer science with emphasis in relational DBMS; limited experience in hardware/software/human interfacing; PASCAL or C language; experience with microcomputers; general knowledge of computer architecture, data structures and algorithms. Individual develops human interface specifications for advanced DBMS; includes the specifications for advanced implementation of application design modules; enter data function and query function; prepares interactive screen specifications, detail description of human interaction and prototype implementation example via programming; performs maintenance of system software and develops and executes tests to insure software conformity with specifications; also adapts system to run on various microcomputers. 40 hrs/week with overtime as necessary. Salary: \$27,000. Send resume to: Employment Division, Attn: Job Order 1917035; 875 Union Street NE, Salem, OR 97311.

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Direct development of service requirements for a family of information services. Ensure fit of functional requirements with service requirements. Minimum 5 years' experience with switching systems, networks, and store-and-forward message systems. MS desirable.

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Identify operational service standards, evaluate performance and initiate corrective actions for new message system and proposed enhancements. Minimum 5 years' experience with switching systems, networks, and store-and-forward message systems. MS desirable.

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Develop requirements and standards for user software, especially for personal computers. Minimum 5 years' experience in development of user-oriented message formatting software. Knowledge of asynchronous communications protocols at the control character level. MS desirable.

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Write product literature for customers, support personnel and sales force. Provide literature consultation to large accounts. Minimum 2 years' experience writing for business or professional organizations. Good knowledge of learning theory and presentation and format styles. BA required.

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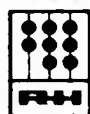
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## DP Professionals

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PROGRAMMER/ANALYSTS

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We seek an individual with 1-3 years experience in a large scale IBM-OS environment using Cobol. Database and on-line experience is preferred. We are not looking for maintenance programmers but individuals who can contribute in a major project setting.

CPCS Specialist

A major project team is being formed and needs an individual versed in CPCS check-processing software. Being the #2 man on the team, the person would be the major technical resource for the design and implementation. Familiarity with the Vector packages a plus. We are looking for a person diverse enough to move into other areas at the completion of the project.

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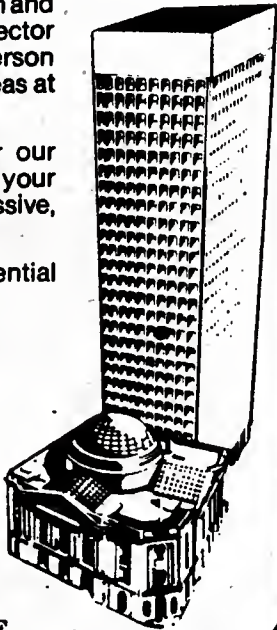
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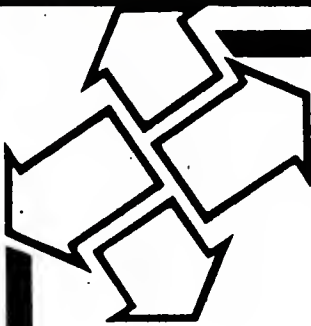
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You will be a self-directed person, capable of working effectively between several technical and management levels. You will serve as the technologist for software metrics projects and coordinate the design and development of process metrics with the development of software tools. Your knowledge of the software development process, applied statistics and data bases is a must. An advanced degree in computer science, applied math or engineering is required plus 6 years of applicable experience. #100205

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Your responsibilities will include the leadership and design direction for compiler code generation and optimization for an advanced PASCAL based language with multiple code generation. You will be called upon to utilize your experience in code generation techniques and project leadership. A BSCS degree or equivalent is required plus 6 years of experience. #75181

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You will be working on the internal design, development, test and implementation of an advanced communications product. Experience in communications/networks and the ISO-OSI Model is desired. Familiarity with PASCAL, NOS/NHP/CCP, X.25 packet switching, SNA or IBM 3270 protocol is a plus. Requires a BSCS or BSEE and 6 years of experience. #91879

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You will be a key member in the design, code, test, and support of the VAX RHF product software for the Loosely Coupled Network. Background in VAX/VMS is desirable. Familiarity with FORTRAN and VAX MACRO a plus. Prefer two or more years experience in data communications and local networks plus an applicable degree. #78364

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You will be a key member of a Software team for the Loosely Coupled Network IBM interface. Requires ability to design and implement software for OS/VS2, MVS system in assembly language. Will also train, install, enhance and provide some software maintenance. Data communications background preferable, but not required. Degree and minimum of five years experience required. #91148

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The Computer Science Program is accepting applications for 2 faculty positions for Fall 1984 to teach graduate and undergraduate courses plus participate in the development of a new MA program. Master's degree in Computer Science minimum. PhD preferred. Salary competitive. Send resume, graduate transcripts, and 3 letters of reference to: Dr. Vern Ellinstead, Computer Science, University of South Dakota, Vermillion, SD 57069. Closing date: April 1, 1984.

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**COLUMBUS:** Michael Thomas, Inc., 65 E. Wilson Bridge Road, Suite 201, Worthington, Ohio 43085 (614) 846-0926  
**DALLAS:** DataPro Personnel Consultants, 12720 Hillcrest, Suite 520, Dallas, Texas 75230 (214) 661-8600  
**DETROIT:** Electronic Systems Personnel, Inc., 3000 Town Center, Suite 2380, Southfield, Michigan 48075 (313) 353-5580  
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**MINNEAPOLIS:** Electronic Systems Personnel, 858 Twin City Federal Tower, 121 S. 8th St., Minneapolis, Minnesota 55402 (612) 338-6714  
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**NORTH CAROLINA:** DataMasters, Div. of TaskForce, Inc., P.O. Box 5888, Greensboro, North Carolina 27405 (919) 373-1461  
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**SAN FRANCISCO:** The Computer Resources Group, Inc., Agency, 303 Sacramento Street, San Francisco, California 94111 (415) 398-3535  
**SEATTLE:** Houser, Martin, Morris & Associates, 1940 116th Avenue N.E., Bellevue, Washington 98004 (206) 453-2700  
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Iowa State Center, ISU, Ames

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Don Forbes, Associate Director  
Iowa State Center, ISU, Ames, IA 50011  
For More Information Call (515) 294-3347

## COMPUTER SOFTWARE CONSULTANT

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## INFORMATION SYSTEMS SPECIALIST

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This is a key position, with responsibilities for worldwide product support. You will also be responsible for identifying, designing, and implementing enhancement that keeps our product at the leading edge of large system technology. Your contributions will be highly visible in our small company, high growth environment.

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The College of Business Administration offers programs at the Bachelor's and Master's levels in the fields of accounting, computer information systems, economics, finance, management and marketing. College of Business Administration Bachelor's and Master's Programs are accredited by the American Assembly of Collegiate Schools of Business.

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# IMS SYSTEMS PROGRAMMERS



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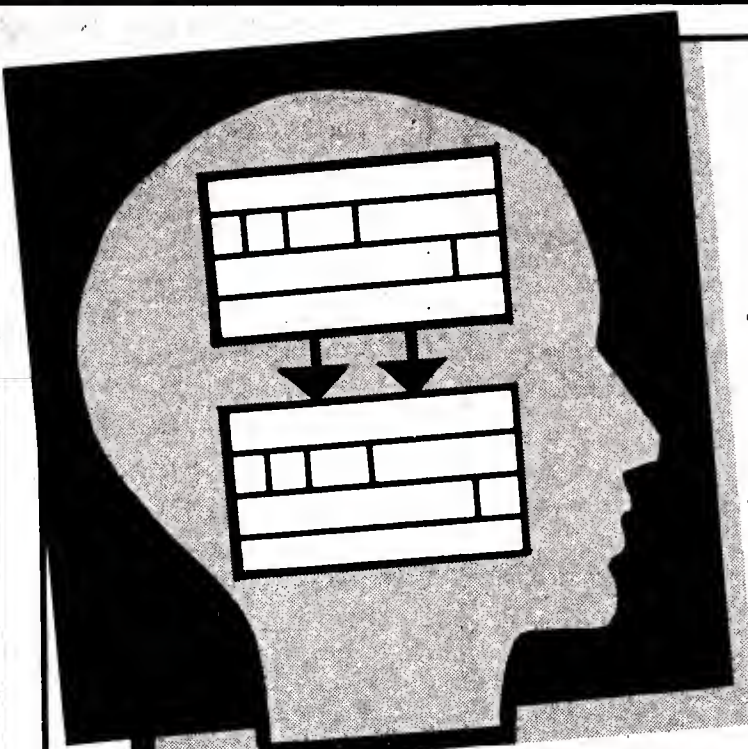
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## SR. DATABASE/ DICTIONARY SPECIALIST

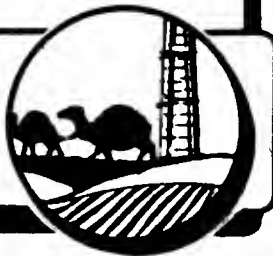
Bachelor's degree required with 6-10 yrs. data processing work experience which includes: a minimum of 1 yr. specific experience using the DATAMANAGER product, systems analysis and design, program development, development and documentation of standards, database administration, and data dictionary management. Training in database management systems, structured methodology of system development integrated data dictionaries, file access methods, data security and control, data analysis/normalization, data modeling, and performance tuning.

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Please send resume, INDICATING POSITION TITLE FOR WHICH YOU ARE APPLYING, with present salary to Personnel Dept. CW-3/5, SYSOREX INTERNATIONAL, INC., 10590 N. Tantau Avenue, Cupertino, CA 95014. U.S. CITIZENSHIP REQUIRED. INDIVIDUALS ONLY APPLY.

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### SYSTEMS ANALYST

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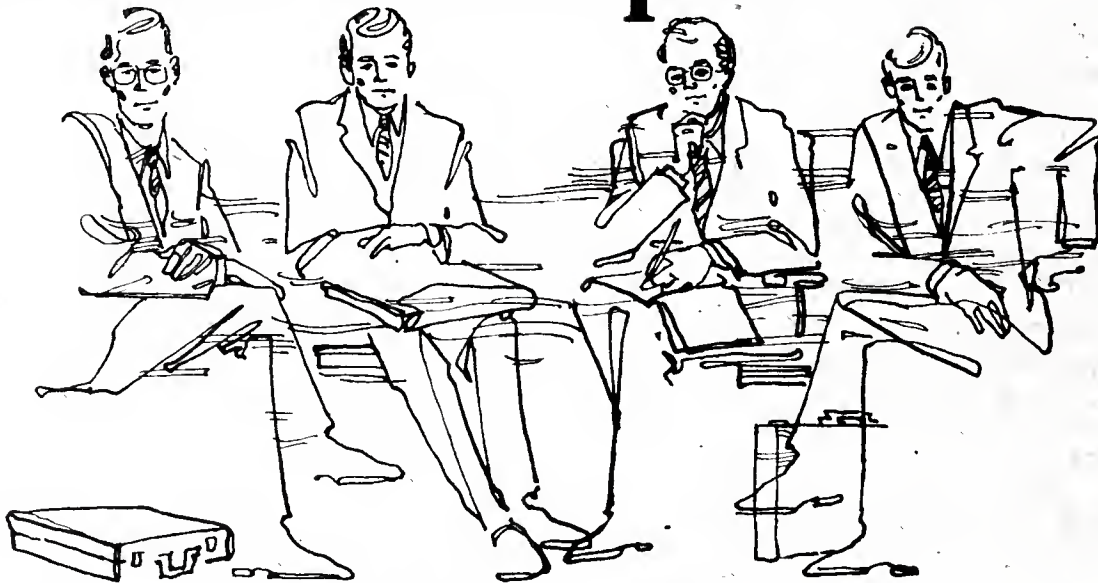
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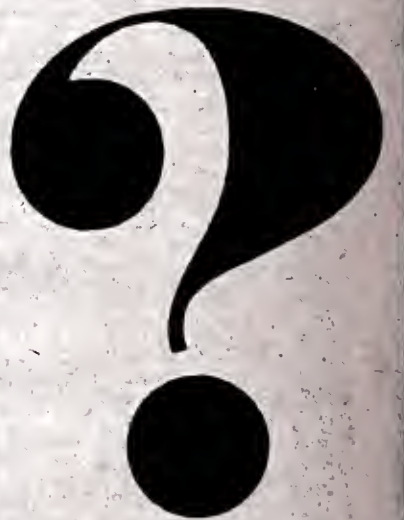
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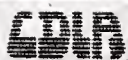
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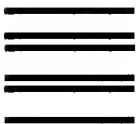
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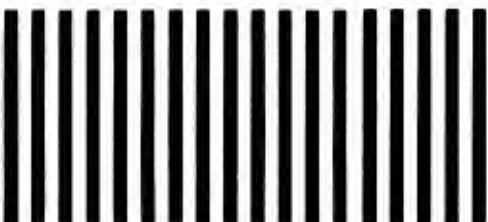
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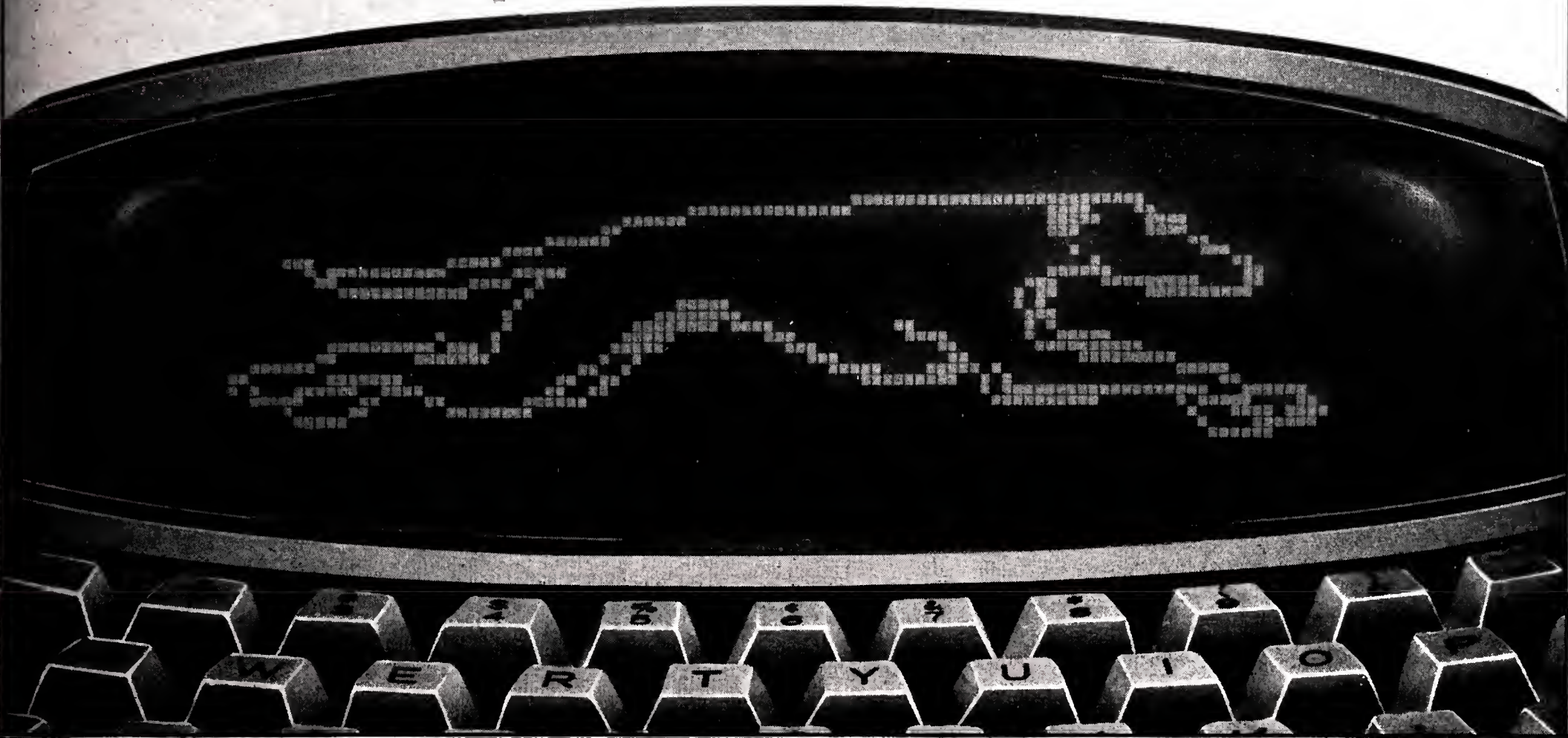
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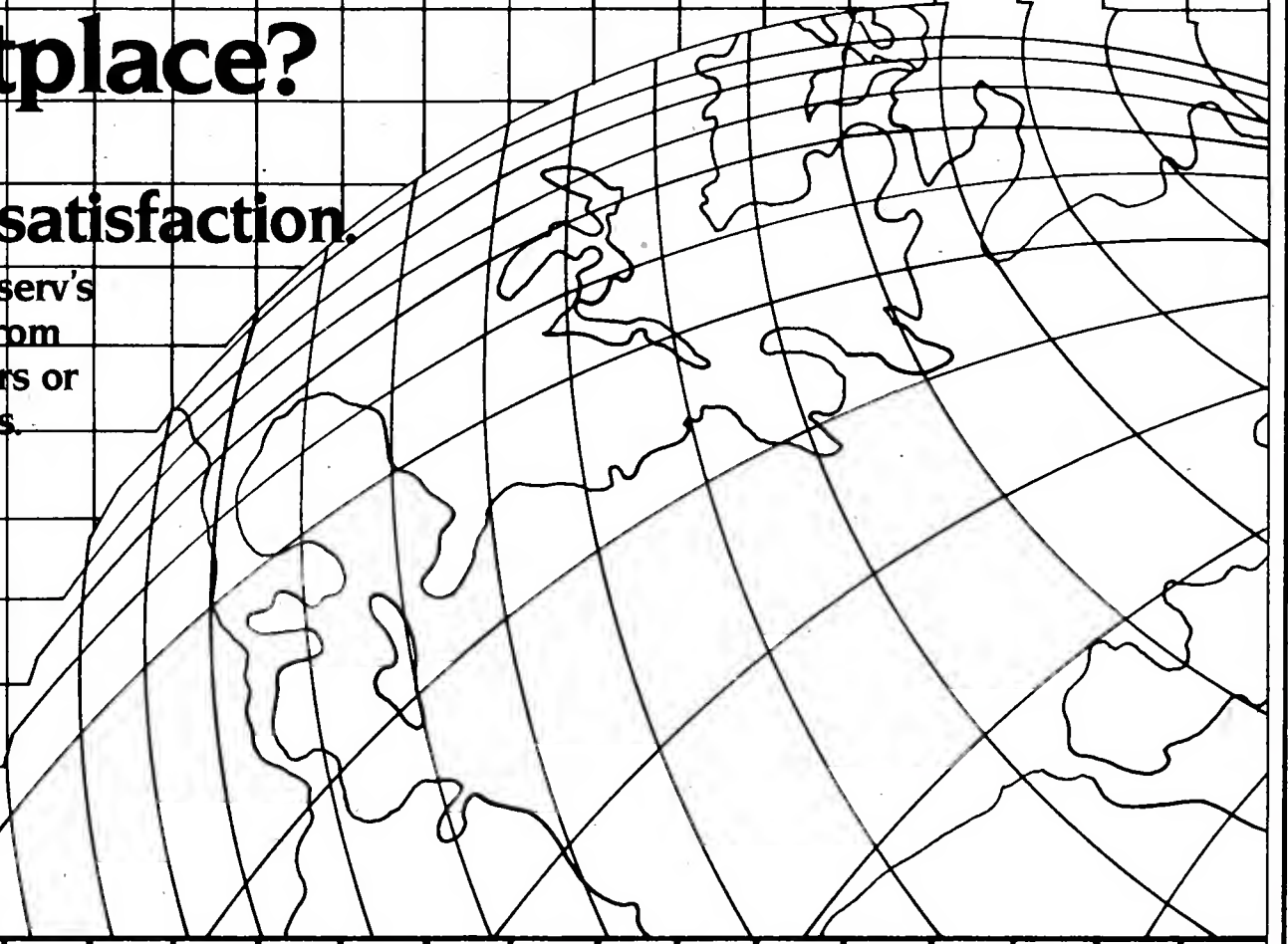
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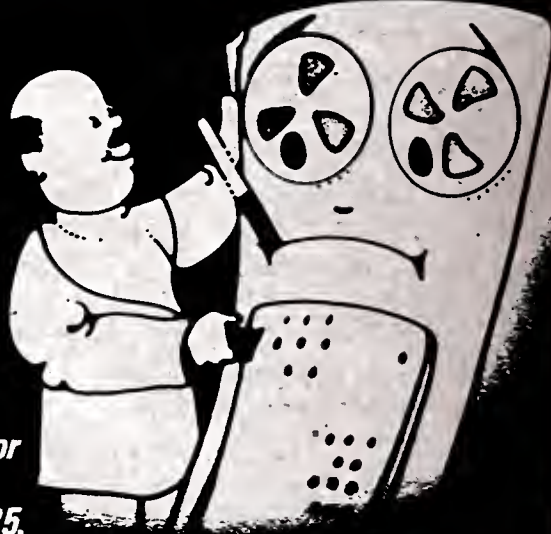
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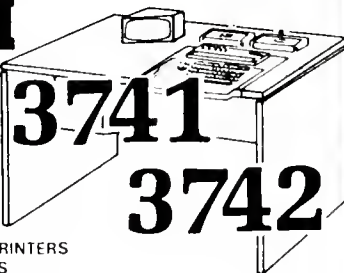
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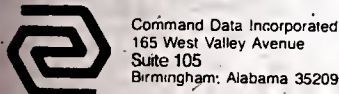
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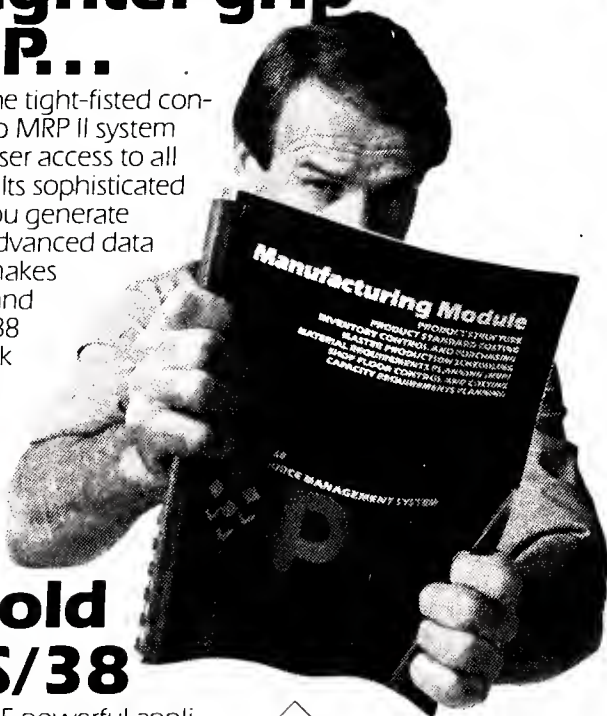
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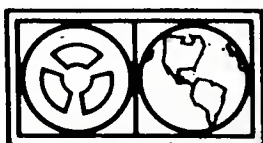
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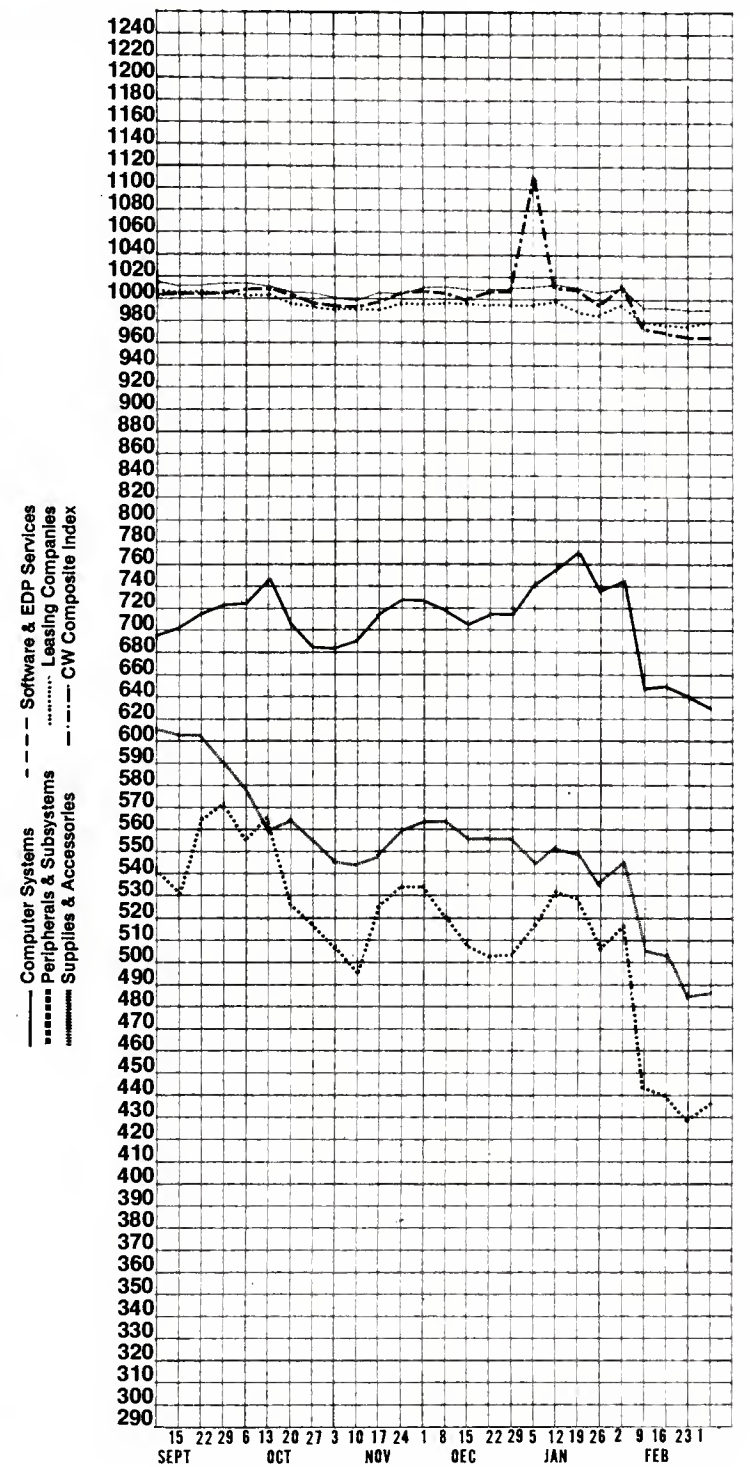
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	1983-84 RANGE	CLOSE FEB 29 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O ALPHA MICROSYSTEMS	11-24	13	-1/2	-3.7
N ALTOS COMPUTER SYST	8-28	9 1/2	0	0.0
A ANOAH CORP	9-30	17	+3/4	+4.6
O APPLE COMPUTER INC	18-63	26 1/4	-1 1/8	-4.1
N AT&T	17-70	16 7/8	0	0.0
O BURROUGHS CORP	28-58	46	+1/8	+0.2
O COMPUTER AUTOMATION	6-17	9 1/2	+1 1/8	+13.4
A COMPUTER CONSOLES	8-26	14 3/4	+1/8	+0.8
N CONTROL DATA CORP	21-62	36 5/8	+1 1/4	+3.5
O CONVERGENT TECHNOL	15-41	17 1/4	+2	+13.1
N CRAY RESEARCH INC	20-58	43 1/2	+1 5/8	+3.8
N DATA GENERAL CORP	10-47	42 3/4	+3/8	+0.8
N DATAPoint CORP	11-36	23 1/4	+1 5/8	+7.5
N DIGITAL EQUIPMENT	82-132	84 7/8	+1 3/4	+2.1
A EECO INC	6-12	14	+1/8	+0.8
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N HARRIS CORP	20-51	29 3/8	-5 3/8	-15.4
N HEWLETT-PACKARD CO	22-48	35 3/8	-1/4	-0.7
N HONEYWELL INC	28-69	51 7/8	-3 3/8	-6.1
N IBM	57-134	110 1/4	+1 1/8	+1.0
O IPL SYSTEMS INC	5-14	5 1/4	+1/2	+10.5
N M/A-COM INC	14-35	14 1/4	+3/8	+2.7
O MAGNUSON COMP SYST	1-5	2 1/8	0	0.0
N MANAGEMENT ASYST	7-26	23 3/8	+7/8	+3.8
N MATSUSHITA ELEC(AOR)	47-86	78 1/4	+3/4	+0.8
N MODULAR COMPUTER SYS	6-11	7 3/4	+1/8	+1.6
N MOTOROLA INC	10-19	10 3/8	-1/2	-4.5
N MOTOROLA INC	82-148	116 1/2	+1 1/2	+1.3
N NAT'L SEMICONDUCTOR	13-60	13 3/8	+5/8	+4.9
N NBI INC	21-51	22 3/4	+1/8	+0.5
N NCR	39-136	105 3/8	-1 3/8	-1.2
N PERKIN-ELMER	17-37	27 1/2	+1 1/2	+5.7
N PRIME COMPUTER INC	11-30	17 3/4	-7/8	-4.6
N SERRA CORP	21-50	41	+1 1/4	+3.1
O TANDEM COMPUTERS INC	14-40	34	+2	+6.2
N TANDY CORP	31-65	31 5/8	-3/8	-1.1
O TELEVIDEO SYSTEMS	11-41	12 3/8	+5/8	+5.3
O TELXON CORP	8-16	9	+1/8	+1.4
N TEXAS INSTRUMENTS	71-176	128 1/2	+1 7/8	+1.4
A ULTIMATE CORP	8-24	15 7/8	+3/8	+2.4
O VECTOR GRAPHICS INC	2-14	1 3/4	-1/8	-5.6
A WANG LABS "B"	13-42	28 3/8	+1 1/4	+4.6
A WANG LABS "C"	11-42	27 3/4	+1/4	+0.9
N XEROX CORP	35-52	41 1/8	-3/4	-1.7

## LEASING COMPANIES

O BOOTH FINANCIAL CP	11-39	39 1/4	+4	+11.3
N COMSCO INC	7-42	12 3/4	+1 1/2	+13.3
O CONTINENTAL INFO SYS	3-16	6 3/4	0	0.0
N OPF INC	5-15	12 3/4	+5/8	+5.1
O SELECTERM INC	13-21	13	0	0.0
N U.S. LEASING	18-47	29 1/2	-3/8	-1.2

## COMPONENTS

N ADVANCED MICRO DEV	13-37	28 1/4	+3/8	+1.3
O ADV'D SEMICONDUCTOR	12-38	25 1/4	-1/2	-1.9
N ANALOG DEVICES INC	18-42	31 3/8	0	0.0
O ANALOGIC CORP	19-27	19 1/4	+1/2	+2.6
N APPLIED MAGNETICS CP	16-37	16 1/2	-1/2	-2.9
N TERAONE	14-39	27 3/4	-1/2	-1.7

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;  
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER  
D-T-C PRICES ARE BID OFFERS AS OF 3 P.M. OR LAST BID  
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES  
E X C H  
C H

SOFTWARE &amp; EDP SERVICES

	1983-84 RANGE	CLOSE FEB 29 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O ADVANCED COMP TECH	1-8	3 1/4	-1/4	-7.1
O ADVANCED SYSTEMS INC	6-22	15 1/2	-1/2	-3.1
O AGS COMPUTERS, INC	7-32	22 1/4	-1 3/8	-5.8
O AMERICAN SOFTWARE	14-31	15 3/4	-3/4	-4.5
N ANACOMP INC	5-23	5	-1/8	-2.4
O ANALYSTS INTL CORP	5-20	7	-1/4	-3.4
A APPLIED DATA RES.	8-37	24 7/8	-1/8	-0.5
O ASK COMPUTER SYSTEMS	6-21	15 1/4	+1	+7.0
B ASTRADYNE COMP INC	1-4	2 1/8	-1/4	-10.5
N AUTOMATIC DATA PROC	21-44	32	+3/4	+2.3
O CBA COMPUTER ASSOC	5-17	11 3/4	+7/8	+8.0
O COMPUTER ASSOC INT'L	6-35	19 1/2	-1 1/4	-6.0
O COMPUTER HORIZONS	8-20	10 3/4	+1/8	+1.1
O COMPUTER NETWORK	4-10	6 3/4	+1/8	+1.8
N COMPUTER SCIENCES	11-23	15 3/8	+1/8	+0.8
O COMPUTER TASK GROUP	8-22	12 1/4	-1/4	-2.0
C COMPUTER USAGE	2-22	7 3/4	+3/4	+10.7
O COMPUTONE SYSTEMS	5-38	6 1/4	0	0.0
O CONSERV CORP	7-20	5 7/8	0	0.0
O COMSHARE	7-14	8	-7/8	-9.8
N CULLINET SOFTWARE	12-50	30 7/8	-2	-6.0
O CYGARE SYSTEMS INC	9-27	17 1/2	-1/4	-1.4
N ELECTRONIC DATA SYST	10-42	25 1/2	-1 7/8	-6.8
O HORGAN SYSTEM INC	14-27	14 1/2	-7/8	-5.6
N GENERAL ELECTRIC CO	45-59	52	0	0.0
N GTE CORP	36-48	38 1/8	+2 1/2	+7.0
N INFORMATICS, INC	10-34	20 1/4	-3/8	-1.8
O INFOTRON SYSTEMS COR	25-43	31	+3 3/4	+13.7
O KEANE ASSOCIATES	4-15	8	0	0.0
O LOGICON	8-31	26 1/2	+1	+3.9
O MCI COMMUNICATIONS	9-34	9 1/2	-1/4	-2.5
O MGT SCI AMER INC	8-33	17 1/4	0	0.0
O MATHEMATICAL APP GRP	8-22	8 1/2	+1/2	+6.2
O MICOM SYSTEMS INC	25-50	36 1/2	-1	-2.6
O MONCHIK-WEAVER CP	6-22	9 1/2	+1	+11.7
O NATIONAL DATA CORP	5-26	19 1/4	+1/2	+2.6
O ON-LINE SOFTWARE INT	10-27	10	-3 1/2	-25.9
O PANOSOPIC SYSTEMS	8-30	13	-3 1/2	-21.2
N PLANNING RESEARCH	6-21	13 1/2	+1/4	+1.8
O POLICY MGMT SYST CP	15-35	24 3/4	+3/4	+3.1
O PROGRAMMING & SYS	1-8	4 7/8	0	0.0
O REYNOLDS & REYNOLD	17-53	31 3/4	-1/4	-0.7
O SEI CORP	11-34	19 1/2	-1/4	-1.2
O SHARED MEDICAL SYST	13-43	27 1/2	+5/8	+2.3
O SCIENTIFIC COMPUTERS	6-14	10	+1/4	+2.5
O SOFTWARE AT	5-17	10 5/8	-7/8	-7.6
N TYMSHARE INC	12-30	24 1/8	+10 3/8	+75.4
A URS CORP	5-18	13 1/4	+3/4	+6.0
N WYLY CORP	7-17	9 1/8	-1/2	-5.1

## PERIPHERALS &amp; SUBSYSTEMS

P AM INTERNATIONAL	2-7	3 1/2	+3/8	+11.7
A ANDERSON JACOBSON	7-26	7 1/4	-3/8	-4.9
O AUTO-TROL TECHNOLOGY	8-29	19 2/8	+7/8	+4.7
O BANCORP INC	7-33	11	0	0.0
A BEEHIVE INT'L	4-15	6 3/4	+1/8	+1.8
N BOLT, BERANEK & NEW	5-30	18 5/8	+1 3/8	+7.9
O CAMBEX CORP	6-28	12 5/8	+3/8	+3.0
N CENTRONICS DATA COMP	4-12	7 5/8	-1/8	-1.6
A CETEC CORP	2-20	8 1/2	0	0.0
O COGNITRONICS	2-20	8 1/2	0	0.0

PERIPHERALS & SUBSYSTEMS  
E X C H  
C H

PERIPHERALS &amp; SUBSYSTEMS

	1983-84 RANGE	CLOSE FEB 29 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O COMPUTER DEVICES INC	1-21	5/8	0	0.0
O COMPUTER TRANSCIVER	3-12	3 1/8	0	0.0
N COMPUTERVISION CORP	19-53	34 1/4	+5/8	+1.8
N CONRAC CORP	15-38	15 1/2	+1/2	+3.3
A DATAPRODUCTS CORP	16-41	22 1/2	-1 1/8	-4.7
A DATARAM CORP	5-12	9 1/8	-3/8	-3.9
O DATA SWITCH CORP	13-41	21 3/8	-5/8	-2.8
O DATUM INC	2-17	7	+5/8	+8.8
O DECISION DATA COMPUT	3-16	9 1/8	+1/8	+1.3
O DECUTEL-OLIVETTI	8-39	9	-3/8	-4.0
N ELECTRONIC M & M	5-11	6	-1/4	-4.0
O ENDATA, INC	10-16	12	+1	+9.0
O EVANS & SUTHERLAND	17-50	19	+1	+5.5
O GANDOLF TECHNOLOGIES	8-22	11	0	0.0
N GEN'L DATA COMM IND	6-33	28 1/8	-1	-3.4
O GREAT SOUTHWEST IND	1-6	1	+1/4	+33.3
N HAZELTINE CORP	7-31	20 1/4	+4	+24.6
O ICOT CORP	3-10	3 1/2	-1/8	-3.4
O INFORMATION INTL INC	10-22	11 3/4	0	0.0
O INFORMATION SCIENCE	10-17	10	-1 1/2	-13.0
O INTEL CORP	11-45	37 1/4	+4	+12.0
O IPL SYSTEMS INC	5-14	5 1/4	+1/2	+10.5
A LUNDY ELECTRONICS	7-19	9 1/2	+1/2	+5.5
O MEGADATA CORP	9-15	9 1/2	-1/2	-5.0
A MSI DATA CORP	16-37	17	-1/4	-1.4
N NASHUA CORP	9-29	21 5/8	+3/8	+1.7
O NETWORK SYSTEMS CORP	8-34	19 7/8	+3/8	+1.9
N NO AMERICAN PHILIPS	47-79	65 5/8	+1/8	+0.1
N NORTHERN TELECOM LTD	22-43	35	-1/4	-0.7
O OMEGA	1-6	6	-1/4	-10.0
H PARADYNE CORP	13-30	13 7/8	+7/8	+6.7
A PENRIL CORP	7-14	12 1/4	+3/8	+3.1
O PHOENIX AMERICAN INC	7-17	8 1/2	0	0.0
N PLESSEY CO (AOR)	26-41	32 1/2	+1 1/4	+4.0
O PRINTRONIX INC	20-34	24	+1	+4.3
O RANTEK CORP	9-26	9 1/2	+3/4	+8.5
N RAYTHEON CO	39-58	39 3/8	0	0.0
N RECOGNITION EQUIP	4-17	12 1/8	+3/8	+3.1
N ROLM CORP	35-80	39	+3/4	+1.8
N SANDERS ASSOCIATES	26-120	37 3/4	+1 7/8	+5.2
O SCAN DATA	1-3	5/8	0	0.0
O SCAN-TRON CORP	12-19	15 3/4	+1/2	+3.2
N SCIENTIFIC ATLANTA	12-23	12 3/8	-1/2	-3.8
N STORAGE TECHNOLOGY	11-33	13 1/4	+1/8	+0.9
O SYKES DATA/TECH	3-27	3 5/8	+1/4	+7.4
O SYSTEMS & COMP TECH	20-39	22	+2	+10.9
A T BAR INC	7-17	8 7/8	-1/8	-1.3
A TAP PRODUCTS CO	8-30	22 3/8	+1/2	+2.2
O TANDON CORP	14-35	16 1/8	0	0.0
A TEC INC	6-12	8 1/4	-1/4	-2.9
N TEKTRONIX INC	34-97	56 1/2	-7	-11.9
N TELEX	5-32	21	+2	+10.5
O TESDATA SYSTEMS CP	3-17	7	+1 1/2	+27.2
N TIMEPLEX INC	7-29	17 7/8	+1 7/8	+11.7
O VISUAL TECHNOLOGY	9-26	12 3/4	-1/4	-1.9

## SUPPLIES &amp; ACCESSORIES

N AMERICAN BUS PRODS	7-23	19 1/8	+1/8	+0.6
N BARRY WRIGHT	13-33	26 1/2	+3/4	+2.9
A DUPLEX PRODUCTS INC	12-27	24	+3/4	+3.2
N ENNIS BUS. FORMS	6-28	18 3/4	-1	-5.0
N 3M COMPANY	49-90	75 3/8	+2 1/4	+3.0
N MOORE CORP LTD	26-51	29	-1/2	-1.2
O STANDARD REGISTER	11-34	29 1/2	0	0.0
N WALLACE BUS FORMS	11-33	24 7/8	+1/8	+0.5



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